

University vice chancellors have now lent their support to the proposed reform of the SIXTH FORM CURRICULUM. Patricia Santinelli examines plans for AS levels (page 12).



Indira Gandhi

Centre and state: T. V. Sathyamurthy examines the origins and nature of the GANDHI DYNASTY in India. Will the precarious balance of power survive the Sikh riots and the assassination of Indira Gandhi? (page 15).

Does Noel Coward's famous advice to Mrs Worthington now apply equally to the scientific laboratory? Peter Campbell laments the continuing lack of a properly defined framework for a SCIENTIFIC CAREER (page 17).

ARTS PAGE: Mother Courage and her director - an interview with Howard Davies... James Tissot at the Barbican... the golden age of Anglo-Saxon art (page 18).

War provided the greatest and confirmation for JEAN-PAUL SARTRE's developing ideas. Kenneth Thompson reviews the French philosopher and novelist's war diaries, raw materials for some of his later and greatest work (page 19).

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## NEXT WEEK

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## London's pride

"Education cuts never heal" say the posters all over London. They have been put up by the Inner London Education Authority as part of its campaign against rate-capping, the imposition by the Department of the Environment of an arbitrary ceiling on the authority's expenditure which would force it to make cuts of between £57m and £75m. Most Londoners seem to agree. A MORI opinion poll commissioned by the ILEA in September found that eight out of ten opposed cuts in spending on education, a finding that is now prominently displayed in three-foot letters on a follow-up poster.

On Tuesday the ILEA decided to set a budget for next year which ignores the Government's instruction to cut its planned expenditure. Mr Patrick Jenkin, the Secretary of State for the Environment, and by proxy extension Sir Keith Joseph, his Cabinet colleague, now face a challenge many times more serious than last year's inconclusive rebellion by Liverpool's Militant-dominated city council. There are important differences between the two confrontations which make the position of the ILEA much stronger and that of the Government much weaker.

The first difference is that the ILEA's new budget is lawful. The provisions of the rate-capping legislation do not come into full effect until next year. So by advancing the date of its budget the ILEA has escaped Mr Jenkin's net. With Liverpool he was dealing with a council teetering on the edge of illegality; with the ILEA he is faced by the unappealing prospect of unscrupling a perfectly lawful budget and so being forced into a demonstration of arbitrary centralist power.

A second difference is that the ILEA's stand clearly enjoys overwhelmingly popular support in inner London. The authority has always enjoyed a solid core of public support, partly because it sits on top of a tenacious tradition of educational improvement stretching back more than a century through the London County Council and the London School Board, partly because it has so successfully rebuilt its beleaguered reputation since the late 1960s. Faced by the new threat of rate-capping the authority built on that solid core of support by promoting a comprehensive exercise in consultation. Parents, teachers, and governors of ILEA

schools and colleges were asked to choose between a rate-capped budget and a freely determined budget; they preferred the latter by an uncontested majority. So the authority has taken its stand on a mandate that may be contrived but is still persuasive.

The third difference is that the Government has decided, reluctantly and against all its political inclinations, that the ILEA should continue after the Greater London Council has been abolished. That the authority should survive in such a hostile climate is not only a measure of its legitimacy but also confers additional legitimacy. The Government's decision to retain the ILEA can only be interpreted as a vote of confidence, however grudging, in the authority's capacity to provide education in inner London. It therefore hardly seems logical to deny the authority the effective power to manage that responsibility - which is the effect of rate-capping.

So far the dispute between the ILEA and the Government has been considered simply in terms of politics. For most commentators that will be sufficient consideration. They will regard the emerging confrontation solely in the context of a re-run of the Liverpool budget clash, or as a sub-plot in Ken Livingstone's campaign against the abolition of the GLC, or as the first example of a left-wing Labour authority "defying" the rate-capping legislation. There is sufficient grist there for every political mill, right and left. Yet all this is secondary excitement; the primary issue is the priority that should be attached to education.

The Government presumably hopes that its case against the ILEA can be sustained by a careful combination of pretending that rate-capping will cause little damage - "good housekeeping", "value for money" and the other disingenuous half-truths no doubt be employed - and reinforcing prejudice against the authority "sink comprehensive", "root teachers", "peace studies" and the rest of the lying litany will be chanted by disavowed camp followers.

The first plank of the argument is plainly dishonest. No education authority can reduce its expenditure by £60m or £70m by good housekeeping and at a stroke, even one with a budget of more than £900m. The officers of the ILEA drew up, as part of the consultation exercise, a shopping list of cuts that would be necessary

if the authority reduced the budget in accordance with Mr Jenkin's wishes. On that list was the ending of all "topping-up" by the authority of its polytechnics and colleges' raw National Advisory Body allocations. In general further and higher education, because it lacks statutory reinforcement, would have to be cut more than schools.

The second plank is quite simply disreputable. Whatever malicious fantasies may flourish in the dark corners of the partisan Institute for Policy Studies or in some dusty corners in the House of Lords, all the fair evidence suggests that in the last 10 years the ILEA has done a good job and that the future prospect is of steady improvement. A shrewd guess would be that HM Inspectors shared the view that the ILEA had made a remarkable recovery from the pre-Houghton trough of high teacher mobility and low morale and indigestible and occasionally ill thought out comprehensive reform. Certainly recent inspections of ILEA schools support this guess. Although the contribution of the often criticized politicians should be recognized, much of the credit should go to the imaginative administration of the ILEA's successive education officers, first Mr Peter Newman and now Mr William Stubbs.

Rate-capping is about much more than cost effectiveness. It is about much more than the capacity of the ILEA as an education authority. For ultimately it affects immediately and directly the quality of the experience available to pupils and students in London's schools and colleges. And nothing is more important and maybe more vulnerable. For that quality is determined not just by the input of resources but by the input of appreciation and commitment. Rate-capping directly reduces the former and less directly but more categorically undermines the latter. We may have become too cynical or self-conscious to talk much in recent years of education as a force for good, for truth, for beauty. We no longer dare to believe in a New Jerusalem. Yet every day in school classrooms, in college lectures, in adult education classes right across London, New Jerusalems are built up, private, personal and fragile maybe, with pain and difficulty certainly. But the achievement is real enough and must be supported by all with a generous hope in our future.

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## Son-of-new blood

During its brief three-year life the new blood programme has been only grudgingly appreciated. But after its death it will be sorely missed. The Department of Education and Science's inability (or unwillingness) to persuade the Treasury to agree to an extension of the programme in the Government's expenditure plans is a serious setback. It is a heavy blow to the already limited prospects for revitalizing the academic profession; it is a heavier blow to the morale of the universities. In both senses it will still further reduce the waning intellectual capital of the system.

The new blood programme has its faults. The number of new posts is too few to have a serious impact on the problem of academic sclerosis; the bias towards science and technology is excessive, especially in view of the fact that because of the pattern of past recruitment the grosser staff imbalances are to be found in arts and social sciences; the method by which new blood posts are selected, basically the shogun advice of the University Grants Committee and research councils, is unsatisfactory; in too many cases the job specifications have been so tightly drawn that good candidates have been discouraged; finally, of course, the whole programme represents a significant invasion of university autonomy.

Yet this catalogue of faults does not add to even half a case for the cancellation of the new blood programme. The criticisms of new blood are puny compared with the enormity

of the problems it is designed to ameliorate, creeping academic sclerosis and waning intellectual capital. They make the case for reform of the programme not its abolition. New blood also had a particular psychological significance in the universities. Despite these shortcomings it is the one bright spot on the horizon of Government policy: the "restructuring" fund for all its covering rhetoric and massive scale was an exercise in closing down, paying off; new blood for all its modesty is an exercise in opening up, a weak but distinct signal to the universities that not all is gloom.

In its advice to Sir Keith Joseph the UGC rightly placed great emphasis on the renewal of the academic profession. Its "bid" was for 500 new posts a year to maintain the academic equilibrium of the system. The prospect of its being accepted by the DES looks bleak after the failure to secure a continuation of the present programme. Those who have remained sceptical about the advantages of the new high-profile open-door UGC may be tempted to conclude that it was better to ask for and be given half a cake in private than to demand the whole cake in public and be given nothing.

Others will argue that the original new blood programme has always been regarded as a temporary expedient by the Government and that there would in any case have to be a struggle to secure either a continuation or a successor scheme. Although the prospect of success may not seem good, the failure to renew the present

programme is not conclusive evidence of the Government's final attitude to the renewal of the academic profession. That is true but the lack of continuity between new blood and any son-of-new blood is bound to reduce the likelihood of there ever being a latter programme.

If the Government is sensible it will recognize that there is no point in devising plans to rescue British science, the centre piece of Sir Keith's new strategy if last week's announcement on public expenditure was a safe guide. If no effort is made to offer attractive careers to young scientists. Good science and scholarship are about new ideas and new ideas are about new people. Throwing more money at old ideas and old people will get nowhere, while the best young people will simply not take up a profession that consists of stitched-together short-term contracts.

There is a danger that the Government will not recognize the scale of the problem of academic renewal. It may feel that with the existing new blood scheme it has already made an adequate contribution and be tempted to move onto new issues (rebuilding Britain's crumbling 1960s campuses?) Or it may relapse into Micawberism and hope that something will turn up to bridge the gap until the 1990s, when themselves (like the new policy on student numbers, although here the wait is for years) will be "turned down" rather than up. Both would be a disservice to the young people of the universities, and to the nation.



## Fifth Column

President Reagan having won an overwhelming victory in the American election, it is tantalizing to ask what exactly was his attraction. This does not seem to have been one of those elections in which the vote was really a vote against the loser because Walter Mondale, everyone seems to agree, is a nice guy. So the massive vote was for Reagan personally. He was a hate figure for students when he was governor of California and now he is the darling of the 18 to 24 age group.

What does he have to offer? According to an informed journalist, history has shown that almost every type of person has been president. Washington proved that a military commander can be president. Jefferson that a scholar can be president. Leaving aside a few barbarians and bloody fools, Wilson proved that an innocent can be president, Roosevelt that a realist can be president. Truman proved that anyone can be president and Eisenhower that no one need be president.

Reagan, I understand, has set a new standard by proving that even the oldest person can be president. Rumour has it that he sleeps for 15 hours a day, which is more than even the oldest professor. Allowing for meals and the occasional relaxation, there is little time left for anything serious and that is why he is so fit and happy.

I don't see why that should be regarded as in any way blame-worthy. Some of the best people have been utterly idle. Berlioz was said to have been so idle that lying in bed one morning writing a piece of music, he dropped it on the floor and rather than exert himself to pick it up composed another piece.

The record of English prime ministers is just as satisfactory. Palmerston spent a lot of his time in bed, usually with someone else's wife. Gladstone's bedroom habits were of course more respectable but more eccentric. His mania for personal economy led him to fill his hot water bottle with his early morning tea so that he could drink it when he woke up in the morning.

The point I am getting round to is that if all the world's statements were as idle as Reagan is reputed to be, the world might be a safer place for us all. If they all had been too idle to declare war in 1914 we would not have lost millions of people in a senseless slaughter that achieved nothing and the need for which has baffled historians since. How satisfactory it will be when the call comes along the hot line to press the button to find that the man at the other end is still asleep, with or without someone else's wife, and is not to be disturbed until the late afternoon.

The only cloud on the horizon is that President Reagan does occasionally reveal a taste for action. "You ain't seen nothing yet." May we continue to see nothing for a long time.

In one of his many brilliant essays, Ronald Knox divided mankind into two categories - the drastic and the pathetic, using pathetic in its true and not its colloquial sense. I think that on a normal day I am a drastic type, though slowly (as is appropriate) becoming pathetic as I learn more about the affairs of the academic world. What we need is that all the world's leaders should be pathetic. Studies of their powerlessness in the face of their own civil servants suggest that many of them already are.

Patrick Nuttgens

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Sir Edward Parkes, vice chancellor of Leeds University and former chairman of the UGC leads his students to the rally. He is with Clare Whiteley, welfare secretary and president Martin Glancey.

## Joseph's £40m switch-on for university science

by Ngaiio Crequer

The Government is on the brink of providing an extra £40m to pay for the switch towards science and technology courses in the universities. An announcement is expected well before Christmas. Although the final decision, involving several ministries, is still to be confirmed, the University Grants Committee is sufficiently confident that it has asked universities to place their bids.

The desire to switch resources to technological, scientific and engineering and other vocational courses was first raised by Sir Keith Joseph, Secretary of State for Education and Science, in September 1983, and confirmed more recently by the Butcher report on skill shortages. The programme is still, known as the "switch" even though any money will not be at the expense of the arts, as was first considered.

The money will not be provided by the Department of Education and Science but by other ministries, probably employment and industry. A senior DES source said this week that the UGC letter was based on "reasonable expectations". The UGC says the programme would probably provide by the following extra places: by 1988, 1,500 a year from conversion courses and 400 from first degree courses; by 1991, 1,500 a year from conversion courses and up to 1,200 a year from first degree courses. First admissions would be in October 1985. The conversion courses would be aimed at science or technology graduates. The main emphasis would be on information

technology and most places would be in electronic engineering and computer sciences, with some in general engineering and production, systems and control engineering.

The Government, not the UGC, would indicate a target number of places and the disciplinary areas in which they should be provided. The money would cover accommodation, equipment and direct teaching costs.

The letter says: "The places would be allocated selectively, with the object of focusing expansion on departments of high quality which are best able to demonstrate that industry values their graduates and is willing actively to help to teach them."

Cost, as well as quality would be taken into account in the allocation and the UGC would arrange to "determine the consensus of industrial opinion on departments best able to meet industry's needs".

It would consider proposals from Scottish universities or those with sandwich or enhanced engineering degree courses for first degree courses of four or even five years' duration. Allocation would not be restricted to institutions which needed no adaptation or extension of buildings, or with no major equipment needs.

The UGC has asked universities for profiles of departments making bids, including details on staff, relationships with industry, qualifications of students on entry and destination of graduates, replacement value of existing equipment and value of research grants.

Leader, back page

## Conservative MPs revolt over grants

by David Jobbins

The Government was warned this week of the biggest backbench revolt since it came to power over the issue of student grants.

Two Commons motions attacking its decision to increase parental contributions, abolish the minimum award and begin to levy tuition fees attracted signatures from 100 Conservative backbenchers on the eve of what promised to be the largest student demonstration for some years.

One motion, tabled by Mr Harry Greenway, MP for Ealing North, warning that access would be inhibited by the parental contribution levels planned, attracted 23 signatures. But a tougher motion, put down by Mr William Benyon, MP for Milton Keynes, was signed by 87 Conservatives right across the party spectrum. It described the new levels as "misconceived and of a severity which will make it difficult if not impossible" for many families to meet the full contribution.

Mr Benyon told *The Times*: "It is the first time the principle of tuition fees has been breached and as far as I am concerned it is the sinking point." MPs had made their views known publicly through the motions and privately to ministers. The Government had to realize that if it continued "there will be a very big vote against".

Thousands of students converged on London on Wednesday for a rally centred on the South Bank. Former chairman of the University Grants Committee, Sir Edward Parkes, accompanied a contingent of about 2,000 from Leeds University, where he is vice-chancellor, to show his support.

Ministers are said to be surprised by the backlash at the proposals. Sir Keith Joseph, Secretary of State for Education and Science, this week defended the decision and denied it was a move to bring in loans by the back door. But he remains attracted to a part loans, part grants system, and the practical effects of the announcement will bring it back on to the political agenda.

NUS aimed to deliver 28,000 letters of protest to Downing Street, either personally or in batches.

Grants opposition, page 5

Leader, back page

## Transbinary group comes a step closer

by Maggie Richards

A transbinary committee to monitor progress in continuing education and advise both the local authority and university sectors on development is likely to be established early next year.

The main aim will be greater cooperation in the provision of continuing education by both sectors, and to bring together the forces of the University Grants Committee and the National Advisory Body to determine policy issues.

The proposal for a joint committee on continuing education was originally put forward in July by the NAB's

continuing education group. Its report followed a major UGC review.

However, whereas the UGC report urged the creation of a standing committee to advise on the university sector and to collaborate with other bodies working in the field, the NAB findings pointed to interest and concern being expressed about continuing education on both sides of the binary line, and suggested the establishment of a joint committee.

More recently the issue has been raised in discussions between the chairmen of both bodies and at a meeting earlier this month, the UGC

came out in favour of a transbinary committee. This week the NAB board considered and also approved the plan, which now goes forward to the NAB committee next Wednesday.

The NAB is scheduled to scrutinize the report of its continuing education group more fully in January, but in view of the UGC interest it was agreed to proceed with the joint committee proposal.

In its report, the NAB continuing education group suggested a transbinary committee comprised of representatives from the UGC, the Open University, and the NAB.

## Sir Keith says teaching and research need not be linked

by Jon Turney

Science Correspondent  
Sir Keith Joseph, Secretary of State for Education and Science, has added his weight to the view that higher education teachers need not do research.

Speaking to the House of Lords select committee on science and technology last week, Sir Keith said he was not persuaded teaching and research had to be linked, after listing to debates between expert academics who took different views. "Plainly successful teaching must keep up with scholarship, but I am not so convinced it depends on original scholarship and research", he said.

However, Sir Keith did believe it was important to maintain the overall base of the universities, which accounted for the extra £10m added to the University Grants Committee equipment grant for next year.

He took issue with what he called the "doom and gloom" abroad about the state of British research, arguing that what was happening to Britain's share of world science was one of the consequences of being a pioneer. We were losing part of our original share, but even the Americans were coming to realise they could not stay in the forefront of every field, he said.

Sir Peter Swinerton-Dyer, chairman of the UGC, expanded on the theme of selectivity before a House of Commons Select Committee earlier this week. He told the education, science and arts committee, inquiring into the science budget, that we had moved from a situation where the amount of research done was limited by the supply of talent to a time when it was controlled by the amount of money available.

Generally, selectivity was a job for the research councils, he felt, not the UGC. But the UGC would need to ask universities for their general research plans to help in decisions about allocation of funds on the other side of the dual support system.

The joint committee of the UGC, the Committee of Vice Chancellors and Principals and the research councils, set up under Professor Brian Gowerlock of Heriot-Watt University, would have its first meeting in two weeks to start considering what a university research plan should look like, Sir Peter said.

The research councils would be asked for help with using the responses universities eventually made. But the UGC could only give universities a very broad steer, according to Sir Peter.



The passing age of the train, 13



# Letters to the editor

## The defence of student grants

Sir, - While I agree with the need for a fundamental review of student support grants as expressed in your leader "The defence of grants" (THESE, November 16), I must protest most strongly about your failure to comment about the problems facing existing students and next year's students while the "new system" is being sorted out. The status quo may embrace many anomalies but the disastrous consequences of this continual erosion of opportunities dramatically speeded up last week must be drawn to everyone's attention. In 1982/83 45 per cent of students did not receive their full parental contribution, and I would hazard a guess that for 1985/86 this will reach the 60 per cent mark.

The country cannot afford to allow higher education to be cut in this way nor can we afford to increase the strains within the family that result from this confusion of responsibilities. By all means let us move towards a different system but do not let us forget those who are caught in the middle of all this. I am not prepared to let our present students, a possible 250,000 as you say, suffer in the cause of a possible modification in the future system, and call for a moratorium and a return to the pre-November 13 situation had as that was. Let us remember the individuals concerned and avoid stereotyping our students as

luddites. Let us try and see them as individuals with rights as well as privileges.

Yours faithfully,  
MICHAEL LOVITT,  
Principal,  
Avery Hill College, London.

Sir, - David Jobbins in his article on the recent changes to the grant system (THESE, November 16) states that up to 10,000 students will benefit from the changes, as they will be lifted out of the contributions net by the increase in the earnings threshold.

This is precisely what the changes do not do. The Department of Education and Science has increased the threshold for which parents are liable to pay contributions to the student grant from £7,600 to £8,100 which reflects the average increase in earnings. This means that no extra people have been exempted. Had Sir Keith wished to exempt 10,000 parents from paying contributions to their sons' or daughters' grant, he would have had to have increased the scale of contributions over and above the rise in average earnings.

Your leader article on "The defence of grants" was welcome and challenging. I would have been grateful, however, if those statements on the National Union of Students policy on

the grant system had been based on NUS's actual views, not on suppositions as to what your writer assumed was NUS's policy.

We shall be looking for an opportunity to express our views and clear up any inaccuracies in our policy in future in your columns. Furthermore, we shall be publishing shortly a document of NUS's views on the relationship between student awards and welfare benefits which we believe will be a useful contribution to the debate on the need for a full review of the system of student financial support.

Yours faithfully,  
LESLIE SMITH,  
Vice-president education,  
National Union of Students.

Sir, - As a parent who had to face without warning an extra contribution of £800 this year for a daughter already at university, I am now being told that I can expect an even greater bill next year. You report that the Government has been pleasantly surprised by the lack of parental antagonism to such moves. Since higher education is an almost inevitable development from school what can the ordinary caring parent do?

Despite our total support for the state system of education my second daughter and I are left with the choice

of paying fees for "private" education at Buckingham or redbrick university or at a "public sector" polytechnic. How long will it be before the "full" fee is demanded? After all the cynical halving of fees by the Government to reduce the resources available to higher education is a recent memory.

As a course leader can I look forward to writing letters to local education authorities in support of and to pass on the bill to the parents? Will the state responsibility for some mandatory awards be passed on to parents or will even more students be forced to live on incomes below the stipulated grant level?

As a science lecturer I can of course take solace in the fact that in my parental capacity I am providing the funds for the scientific research needed for us to regain our first division status. Above all, as one of your readers I take comfort that you are campaigning with the sort of ethical resolution one would expect from the use of a chocolate freguard. Last my letter and your leader column should mislead, there is more at stake in this shift from state to parent than inconvenience to parental finances.

GORDON HURST,  
Manchester Polytechnic.

questionable. He is wrong to assert that Carr does not effectively distinguish between the two meanings of "history" as he the human past and as the process of finding out about that past. Few other writers on the subject take such care to do so. Carr deliberately personifies the discipline when ambiguity threatens, "the historian's approach is..." and so on. A rereading of chapter four (on causes) is particularly instructive here.

Marwick's misconception of Carr's "misconception" of the nature of a historical fact is equally odd. Indeed Marwick's statement that he knows many "quite definitively established historical facts" which he has not yet used begs all of the questions that Carr has raised and ignores Carr's proposition that "a belief in a hard core of historical facts existing objectively and independently of the interpretation of the historian is a preposterous fallacy".

There is a similar misstatement of Carr's view of causes in history, presented by Marwick as involving a cavalier and naive dismissal of the role of accident. What Carr actually offers is a carefully argued statement about a hierarchy of causes the ordering of which is fundamental in shaping the purpose and possibilities of the discipline.

What is history? is an enjoyable and persuasive claim that the subject is central to a proper understanding of the human condition past and present, and that, viewed in his way, it legitimates an optimistic and radical view of that condition as it is affected by the processes of historical change. In taking this position with such openness and clarity Carr has done a notable service to the subject. In attacking that position so pusillanimously Marwick has not.

PETER BRUNSDON,  
Principal lecturer in history,  
The Polytechnic of Wales.



E. H. Carr: "done service to history"

Marwick's attack leaves Carr's argument largely unscathed. Certainly it is possible to agree with him that Carr's idea of the value of documents is extraordinarily narrow, and that the slender treatment given to research methods is regrettable - but neither of these factors significantly affect the main propositions of the book which concern the status and use of historical information and strategies rather than precise techniques of discovery. Marwick is no doubt right too in denying Carr's claim that "the study of history is (only) the study of causes". But here too the main proposition about the way in which history is used to illuminate the human past will hold good whether the focus is "causes" or "situations".

Elsewhere Marwick is much more

## Privileged alliance

Sir, - It may seem churlish to respond adversely to a reply to my article that is in the main supportive. But in offering his support (and accompanying observations) Mr Corlett (THESE, November 16) manifests precisely that combination of confusion, anecdote and complacency which, when associated with art history, has been so damaging and which prompted the article in the first place.

To begin with, I did not suggest that art history needed a "shake-up". When you shake something up you agitate it violently so that the pieces are redistributed. They are, however, the same pieces in the same container.

A shake-up is certainly not what art historians need. My article addressed a very different need: for art historians to become more alert to contingent factors, to work for a more rigorous theoretical structure without losing the distinctive characteristics of the discipline and to acquire a greater degree of consciousness about the politics of their subject in the contemporary as well as the historical sense.

It is unclear what Mr Corlett has in mind when he describes art history as "a fairly well-paid and fairly agreeable employment". Is he thinking of school teachers, polytechnic and university lecturers, in-house keepers, volunteer guides in the Tate Gallery, self-employed researchers or the very considerable numbers of temporary and part-time lecturers in further and higher education who eke out a living as professional art historians or design historians? His phrase is so general as to be meaningless.

I fear that he has misunderstood my point which was not, of course, that working conditions and pay had in the past served to ally art history, at least by reputation, with a privileged section of society (it cannot differ substantially in this respect from other comparable areas of employment) but that the dominance of certain approaches within the discipline, approaches which remain significant but not necessarily preeminent, had had the effect of forging such an alliance.

Mr Corlett's admiration for the self-taught is very much a part of that disdain for professionalism and intellectual rigour, that inward-looking quality of "doing as one likes" which Matthew Arnold so astutely identified with British philistinism and which has rendered art history in some ways resistant to change and innovation. Lord Clark, whose portrait characteristically you print accompanied by the keyword "inspiration" was, for all his undoubted perceptiveness, knowledge and talent for communication, a writer and broadcaster who reinforced the view that art history is about masterpieces and further institutionalised already popular criterion of personal response as central to the practice of art history.

Most seriously Mr Corlett writes as though art historians can choose to ignore Marx and Freud, as though they can circumnavigate these writers in the interests of concentrating on the work of art. It seems an astonishing thing to have to point out that a serious scholar in the humanities can no more avoid Marx and Freud than they can avoid Plato and Aristotle, or Voltaire and Rousseau or any other thinkers whose ideas permeate the very fabric of our intellectual life. I am grateful to Mr Corlett for his letter demonstrates, more clearly than I could have hoped, why art history needs to assess its strengths and look beyond its traditional boundaries.

Yours faithfully,  
MARCIA POINTON,  
School of English and American Studies,  
University of Sussex.

## Keeping count

Sir, - Data processing is considered by the Department of Education and Science and others (THESE, November 23) a subject of mathematics because it counts?

Yours faithfully,  
DAVID STEPHENS,  
Department of education in developing countries,  
University of London Institute of Education.

## Council leader suggests merger

by Maggie Richards

Tentative proposals have been put forward this week for the merger of Warwick University and Coventry Polytechnic.

The suggestion, which has been mentioned informally to both Warwick's vice-chancellor and the director of Coventry Polytechnic, has come from Mr Peter Lister, leader of Coventry City Council.

In putting forward the proposition, Mr Lister emphasised that he viewed it as an extremely long-term measure, about which extensive consultations would need to take place.

Behind the move is the belief that both institutions might benefit from an amalgamation which would create a single institution with a student population of 10,000 plus. Full utilization could then be made of the polytechnic's central but overburdened site in Coventry, and Warwick's more extensive green field campus on the outskirts of the city.

This week Mr Lister admitted he had raised the matter with both institutions on a totally informal basis: "It is an idea of mine for which I am happy to take responsibility. I have talked about it to the director of the polytechnic in conversational terms and talked similarly to the vice-chancellor. But I have not talked to both of them together, nor have there been any formal discussions with the university or polytechnic."

Another of Mr Lister's concerns is that the issue is fully explored before any effect of falling student numbers in the 1990s is felt by both institutions. "At present I do not know what the next stage will be, but I shall be making sure the matter does not lie dormant. By the time the question of numbers

becomes critical a great deal of work must have been done," he added.

Mr Geoffrey Holroyde, director of Coventry Polytechnic, felt in the long term there could well be "much merit" in the university and polytechnic working closer together.

"One possibility could be some form of merger which builds on the strength of both institutions. But it must be said that this is a very long way off, and has to be discussed thoroughly," he said.

Mr Jack Butterworth, Warwick's vice-chancellor, explained: "The possibility of a merger has been mentioned very informally on two or three occasions. Of course, it is the case that a most successful merger occurred when the college of education merged into the university and became the faculty of education studies."

Warwick, he added, already shared many interests in common with the polytechnic in such areas as continuing education, updating courses and validation for further education.

Plans for a single higher education institution serving the area were originally outlined during the early years of the university, but hopes were dashed by the Woolwich speech of Labour minister Mr Anthony Crosland, which set the scene for the present two tier pattern of higher education.

"Whether it is now legally and politically possible for a merger to occur is something we do not know," Mr Butterworth added. "We share with the polytechnic increasing areas of common interest, particularly in engineering and business studies, and if the research and teaching in these areas could be improved, by such a proposal then I would be happy that the university and the polytechnic should look into any possibility which was put before us."

## 'Good housekeeping' results in £2m surplus for NUS

The National Union of Students has built up assets of almost £2m with an unexpected surplus of more than £167,000 in the last financial year.

Figures to be reported to the NUS conference next week show that a budget surplus of £137,594 turned into an actual profit of £305,187.

In 1980, the organization was on its beam ends, with assets of barely £30,000 but a number of factors including implementation of its recovery plan have increased this to £1.98m. "Good housekeeping" and the move from Bloomsbury to Holloway Road account for much of the budget surplus. But some of it is a result of the success with which student unions have so far protected themselves from the effects of the cuts, according to NUS president Mr Phil Woolas, and his treasurer, Mr Ian Murray.

In line with its policy of taking a share in any cut in income received by affiliated unions, NUS had predicted a £85,000 shortfall. But this has not happened.

Neither Mr Woolas nor Mr Murray are confident that student unions will be as successful in protecting their allocations from college funds as they have been in the immediate past.

Mr Woolas believes the reserves must be maintained to protect the union in the event of Government moves towards voluntary membership, and that the "windfall" should be used to finance one-off projects rather than committing NUS to ongoing spending. Much of the money is likely to be used to finance NUS's campaign against the Government

Meanwhile, last-minute decisions are being taken today on the candidates who will run for office in the college elections' union.

The keener battle will be for the key job of treasurer of the National Association of Teachers in Further and Higher Education, a post held by Mr Bill Easton, who is retiring.

Originally it seemed that there would be a three-way battle between a trio of past presidents of modern or right wing inclination. But Mr Malcolm Leach, one of the three, suffered a heart attack six weeks ago and has now withdrawn from the race, leaving Mr Chris Minto and immediate past president Mr Cecil Robinson in the field. Nominations close tomorrow, and both men were said to be expected to run.

It is not yet clear whether the left will contest the treasurer's post. They appeared more interested in the post of vice president, with three names being widely mentioned. There were last Brian Jones, who fought the election at Watford College and has only recently joined the executive and Mr Ken Childhouse who has never sat on the executive, but is a member of national council and has chaired his region, Oxford, London.

Mr Thomas eventually decided not to stand, and Mr Childhouse was due to announce his decision today. Mr Jones, who is chair of the union's salaries committee and therefore heavily committed on the pay front, was also deciding by today whether these commitments would allow him to run.

## Some youth training courses 'prehistoric'

Some of the provision by colleges of further education for the Youth Training Scheme is prehistoric, Mr Peter Morrison, minister of state for employment, said this week.

Mr Morrison also ruled out an extension of YTS to a two-year scheme on the grounds of cost and Government interference. He said too much Government involvement could result in local demands not being met.

The minister was addressing an audience of employers, managing agents and private trainers at a Confederation of British Industry work-

shop held in London. In reply to a critical assessment of colleges by managing agents Mr Morrison said that he did not wish to attack colleges, but frankly some of their training was prehistoric.

"I am quite happy for colleges to be used but I agree they are too academic. I think however they will get better at tailoring their courses to meet employers' needs. Some however will not and this leaves a gap," Mr Morrison said.

He added that he was delighted that there was no consensus for a nationally

## Harrington gets NF bravery award

by Karen Gold

Mr Patrick Harrington, a third-year philosophy student at the Polytechnic of North London, has received the National Front's annual bravery award and been voted on to the party's 18-member directorate.

Mr Harrington received the Albert Mariner award - a shield commemorating a NF member who died on a demonstration two years ago - at the front's annual general meeting last week, the day after he was prevented from entering the polytechnic for his lecturers by a student picket.

The polytechnic directorate is to go back to the High Court next week, applying to be allowed to make separate arrangements to teach him - something the court refused earlier.

The directorate has also applied for a repositioning order for its Kentish Town building, which has been occupied by students for over a week. Then director, Mr David MacDowall, has written to all students at their homes telling them of the return to court, and saying arrangements have been made for all students to be free from lecturers or tutorials for an extraordinary general meeting of the students union this week to vote on further action on the occupation and on Mr Harrington's presence.

Mr MacDowall has also written to all polytechnic staff reminding them of previous court judgments stating that they are obliged to identify students picketing to prevent Mr Harrington's access to the polytechnic. Mr Harrington now has an order for the

polytechnic to do this whenever his access is hindered, without returning to court each time.

Two students were this week jailed until December 14 by a High Court judge for refusing to promise not to prevent Mr Harrington from entering the polytechnic.

Mr Justice Drake said that he had absolutely no alternative but to jail for contempt of court Steven Tasane and John Letham, until the end of term. "I am informed that Mr Harrington holds political views that are quite odious to most people... but students and others who are not students are entitled to disagree with his political beliefs but they have no right to do so in a manner which is unlawful," he said.

## Concern as teacher training intakes fall below target

by Patricia Santinelli

Shortfalls in recruitment to specific BEd and PGCE secondary subjects in both universities and the public sector, have resulted in intakes for 1984 being 13 per cent below target according to provisional figures presented to the Government's advisory body on teacher training.

More detailed information on recruitment will be available next week when the clearing house and Graduate Teacher Training Registry are expected to release their annual figures.

But according to the figures given to the Advisory Committee on the Supply and Education of Teachers, the secondary BEd is worst affected with recruitment being some 10 per cent short of target.

Total recruitment to the secondary BEd amounted to 1,744 intakes on a target of 1,934. Universities recruited 308 students as opposed to the intended 344, while the public sector recruited 1,438 instead of 1,590 students.

As the paper points out, although some secondary BEd subjects have recruited well and some like physical education continue to over-recruit, the shortfall has been created lack of intakes to some six subjects, a number

of which have always suffered from shortage of recruits.

According to the paper, recruitment to music is 37 per cent below par, religious education 60 per cent, maths 27 per cent, science 21 per cent, craft design and technology 10 per cent, and home economics 11 per cent.

The shortfall in recruitment to the postgraduate route is much smaller at 3 per cent. The total target for both universities and the public sector was 6,910, whilst student recruitment was 6,708. The universities are short of some 116 intakes and the public sector of some 86.

Nevertheless this lower figure hides a substantial shortfall in a number of subjects. For example the universities had shortfalls in a number of subjects. For example the universities had shortfalls in social science of 31 per cent, craft design and technology, 27 per cent, and maths 10 per cent, while the public sector's main shortage were in maths 15 per cent, craft design and technology 18 per cent, physical education 13 per cent and home economics 19 per cent.

These figures, especially those for the BEd, are likely to have influenced ACSET's decision spelt out in its preliminary recommendations to increase allocations in some secondary BEd subjects for the next five years.

## Boning up on the whale

The dead whale washed up on the shore at Bexhill, Sussex, last weekend is to go to a Kent University professor's private collection.

Professor Stephen Holt's subject is European studies, but he and his son, a medical student, have an interest in the anatomy and physiology of sea creatures.

## Colleges gain at the expense of polytechnics

A compromise solution reached by the National Advisory Body board on 1985/86 funding will mean a little more money for the major colleges of higher education at the expense of the polytechnics.

The board's decision will be considered by the NAB committee next month. It rewards the most cost-effective colleges by setting a "floor" - the lowest level of funding per student - at £1,300. The board decided on that compromise after it rejected a much

more generous sum for the colleges - £1,315 - but did not consider an alternative figure of £1,270 which would have left more money for the polytechnics.

The NAB committee will also be asked to consider urgently a way of giving more money to the large colleges such as Humber and Basing by creating a new funding category.

The board agreed by a substantial majority to recommend reserving

£2.5m for a research fund, although the question is likely to be fiercely argued at NAB's committee, where local authority members are expected to push the money to be spread over all.

A proposal to spend more money on teacher education by improving staff-student ratio on those courses, proposed by HM Inspectors, was not agreed after the Department of Education and Science representatives on the NAB did not press their case.

## Pharmacists want joint talks on cuts

The Pharmaceutical Society of Great Britain is to urge the University Grants Committee to retain Heriot-Watt university's pharmacy department.

The UGC first proposed the closure after the Pharmaceutical Society said there should be a 10 per cent cut in student intake, but the society has always maintained that the cuts should be achieved on a national basis. Now, the society and the university are jointly seeking tripartite talks with the UGC.

In July the UGC told the university that next session's intake should be the last.

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# Houghton levels 'a pipedream'

by David Jobbins

Local authority employers have dismissed union plans for restoration of college lecturers' salaries to the levels set in 1974 by the Houghton report as an unattainable pipedream.

But the have offered a fundamental review of the pay structure and conditions of service as a way towards meeting the unions' complaints about the existing system while achieving the greater flexibility they feel is desperately needed.

The offer of a joint review was made last week in the Burnham further education committee, which has been adjourned so that lecturers' leaders can study in detail the issues the employers hope to act on.

No one expects that the review, if the unions agree to it, will necessarily produce dramatic results in time for the 1985 pay negotiations. But the

employers hope enough progress will have been made to convince both sides of the need to press on, perhaps for 1986.

They aim to construct a balanced package which will be partially self-financing and sufficiently justifiable on educational grounds to convince ministers that they should meet the remaining costs.

Grading of courses is one element of the review where both employers and unions believe improvements beneficial to both sides can be made.

There is general recognition on both sides that people teaching low level non-advanced work are not being rewarded for the professional skills demanded of them. Many are caught in the lecturer 1 trap, unable to win promotion because of the relationship between grading of courses and the Burnham salary structure.

"We need a more multi-dimensional approach to measuring the job," a management official said.

The employers also hold hope to transplant their proposals for a career grade in the schools to further education, effectively offering an upward extension of the lecturer 1 scale in response to the unions' demand for automatic transfer to the lecturer 2 scale.

A claim for 20.5 per cent as a first step towards restoration of Houghton is to be discussed by leaders of the National Association of Teachers in Further and Higher Education next week. At the weekend regional councils will discuss the package which also includes industrial action.

The executive of the Association of University Teachers is expected to determine its 1985 claim at its council in York next month.

# EEC researchers stand to gain on redundancy

by Jon Turney

Science Correspondent

British scientists waiting for redundancy as part of the restructuring of research council institutes are looking enviously at their European colleagues this week, following the disclosure that some EEC researchers stand to gain more than £400,000 severance pay.

The European Commission wants to persuade 120 nuclear scientists to leave the European research centre Ispra, in Italy, by promising them 70 per cent of their current salaries until they reach normal retirement age. With salary levels averaging over £20,000 a year, most of those who accept the offer will receive around £200,000.

Mr Glynn Ford, Labour Euro MP for Greater Manchester East said the amounts involved were unbelievable

compared with the money received by British university researchers working on short-term contracts or research council staff facing redundancy. He asked how our Government could agree to individuals getting £420,000 when scientists in the Agriculture and Food Research Council were being made redundant on such poor terms.

Researchers working for the AFRC, which plans to shed 1,000 jobs by the end of the decade, many through redundancy, receive a maximum of three-eighths of their salary if they lose their jobs, plus a small lump sum. And the council has just failed on its second attempt to secure Treasury permission to pay extra compensation to researchers at the National Institute for Research in Dairying and the Grassland Research Institute.

# Frome faces problems, says HMI

The problems created by combining a school and further education college can outweigh the advantages gained in post 16 provision, Her Majesty's Inspectorate says this week in a report on Frome College, Somerset.

HMI said that although much has been achieved in the area of curricular development and joint provision, the problems have inhibited the realization of the full potential of such an arrangement. These were caused by different organizational structures, salary scales and conditions of work as well as by differences in the staff's terms of perception and attitude.

The inspectorate adds however, that sufficient progress has been made to indicate that the experiment is not without merit and could be successfully built on. But it warns that this will require a reconsideration of some existing practices and a commitment from all staff and students to work harmoniously towards the goal of a unified college.

HMI points out that the quality of much of the teaching observed was high, but that in a number of instances students should have been given a greater challenge, and the principles of inquiry and independent learning given greater prominence.

In another report, the inspectorate says that colleges seeking the maximum benefit from releasing lecturers for in-service teacher training should give them greater support.

The report, based on a survey of five centres offering in-service part time certificates in education, says that in the rare cases where such support existed, either via a mentor system or professional tutor, it proved to be one of the more positive features in the successful transition of training into practice.

The centres involved in association with other colleges are the East Midlands Consortium, Hatfield, Portsmouth, Plymouth and Wolverhampton Polytechnics.

The inspectorate points out that among those lecturers released, a significant minority had no remission from their teaching load, and this caused difficulties, particularly in the case of new entrants.

As far as teaching in the five centres was concerned, HMI says that much of it was good, but that there were some unacceptable examples.

**Frome College - Inspection of Post 16 Provision and HMI Report - In-Service Part Time Certificate in Education for Further Education Teachers in Five Centres** are available from DES, Publications Despatch Centre, Honey Pot Lane, Stanmore, Middx.



NELP's new broom: research assistant Rob Warren, who has joined North-East London Polytechnic to monitor the local environment for the London borough of Newham, has been collecting samples to check the lead content of air, dust and soil. The £10,000 research project is a joint one between the polytechnic and the borough's environmental health service. After samples have been collected they will be chemically and biologically analysed.

# Cambridge to have first chair in animal welfare

The first chair in animal welfare in the country is to be established at Cambridge University with a £350,000 bequest as part of a national campaign to stop cruelty to animals "whether caused through ignorance or intent".

Professor David Bellamy, who holds an honorary chair at Durham University, launched a £1m appeal last week on behalf of the British Veterinary Association Animal Welfare Foundation, to be used for research and educational purposes, and public campaigning.

The funds for the Cambridge chair however have already been secured, and the first of seven £50,000 annual instalments has already been paid to the university. It is hoped a new professor will be ready to start work by October 1985, with further funds from the appeal used to fund research and postgraduate work at Cambridge.

Mr Neil King, chairman of the foundation, and a practising veterinary

surgeon, said the aim was to establish animal welfare as a proper science, linking such subjects as zoology, agricultural science, architecture and animal behaviour. Bristol was the other university in the running.

The campaign marks growing unease among vets that their voice was not being heard in the public debate over animal welfare. Mr King, describing himself as a militant moderate, said the debate was being seen as between the "cherry-hatted brigade" on the one hand and "evil activists" on the other.

Funds are to be used to produce videos, guidelines and codes for everyone involved in animal welfare, from those working in animal husbandry to schoolteachers giving advice on pets. Courses at University College, Wales in zoology and animal welfare are to be sponsored and research projects to investigate alternatives to battery farming and animal experimentation.

# Glasgow professor shocked by US monkey video

A leading medical professor has said he is shocked by a video revealing malpractice at the University of Pennsylvania during experiments which brain-damaged monkeys.

Professor James Adams, head of Glasgow University's department of neuropathology, and his colleague Professor David Graham have warned Pennsylvania that they will withdraw from the research unless they are assured that the laboratories and animal facilities have been inspected by an independent group within the past year, and that the written protocol for anaesthetizing the animals is strictly adhered to.

Glasgow's Institute of neurological sciences is the world's leading centre in brain damage research, and over the past eight years has received from Pennsylvania around 100 frozen brains of monkeys and baboons who have been subjected to pressure to create brain damage.

The Scottish Anti-Vivisection Society has now revealed a video of the Pennsylvania experiments, showing researchers smoking and making fun of the brain damaged animals.

The 27-minute video was compiled by the American animal rights organization from tapes stolen from Pennsylvania earlier this year. The theft is the subject of a grand jury summons against those believed involved.

Professor Adams said he had been

considerably disturbed by scenes showing "the very casual approach of some of the experimental staff".

However, Glasgow has stressed that the video is at least two years old. An official said: "there were aspects of the pictures which were quite horrific in terms of experimental procedure, which would not be either acceptable or possible here." Glasgow understood the smoking and "other obviously poor practice" was due to a single unsatisfactory member of the team who was no longer employed there, she said.

The video also shows the animals apparently trying to break free from experimental equipment, but the Glasgow official said the experimental protocol stated that the animals would not be conscious, although anaesthetized. They would therefore be able to open their eyes and have some movement.

"Doctors and nurses working in operating theatres know that when, for the patient's safety, anaesthesia has to be kept light, patients may move and have to be restrained," she said. "This does not mean that they feel pain or remember anything."

Glasgow receives only some of the monkey brains from Pennsylvania which conducts experiments for a number of North American centres in a research programme funded by the US National Institutes of Health.

# Bill means an 'ILEA takeover'

by Karen Gold

Proposed legislation would give ministers unprecedented powers over local authorities and was in effect a takeover bill for the Inner London Education Authority, ILEA leaders Mrs Frances Morrell said this week.

Mrs Morrell said the proposals published as part of the Government's abolition plans for the Greater London Council and metropolitan county councils were scandalous. They went directly against assurances given to inner London parents that the ILEA was safe, she said.

The Local Government Bill, which is expected to have a stormy passage through Parliament to achieve its target of abolishing the GLC and six metropolitan counties by March 1986, contains new proposals for the future of the ILEA. In original Government plans the authority was to become a board with representatives from local boroughs. The Government then bowed to pressure, not least from London Conservative councillors, and agreed to a directly elected ILEA, whose status would be reviewed before 1991.

But the Bill, published last week, would allow the break-up of the authority by ministerial order at any time before or after that without the need for further legislation. It would also allow for parts of the authority's responsibilities - its higher education or youth work for example - to be hived off to the local boroughs, central administration or another body by the minister in charge, again without needing recourse to Parliament.

Mrs Morrell said that not only did the Bill revive the threat of the break-up of the ILEA, it also gave the Government unprecedented powers to interfere in the education policies and finance of the authority. Sir Keith Joseph, secretary of state for education and science, had promised earlier this year that ILEA had never been under threat of dismemberment, and that apart from rate-capping the authority would be free to decide its priorities and allocate resources as it saw fit.

The Government has broken its promise and the Government has decided to run the ILEA itself and to reserve the right to break up the ILEA wholly or in part whenever it wishes," she said.

The Bill also details powers to be given to the secretary of state during the first three years of the life of the new, directly elected ILEA. As well as being automatically "rate-capped" for the first three years, from 1986, its organization and management, the number of staff employed and the services and supplies will all be subject to ministerial approval.

Mrs Morrell said the authority would campaign against the bill hand-in-hand with the GLC and its own campaign against rate-capping. The government had no mandate for taking these powers; it was not part of their plans for financial restrictions on the ILEA.

# Academic staff 'wasting time'

by David Jobbins

Better use of academic staff could save local education authorities money - or permit up to 75,000 more students in further and higher education according to the Audit Commission.

The commission's first annual report, which builds on preliminary work carried out in polytechnics and colleges by the former Audit Inspectorate, claims there are "numerous" examples of failure to make the best use of the teaching hours permissible under local agreements.

It claims that in many colleges or polytechnics lecturers:

- fail to achieve maximum class contact hours;
- include tea breaks in their contact hours;
- take "high levels" of remission;
- receive overtime or undertake part-time contracts before their agreed

full-time contact hours are exhausted;

● poorly maintain registers and time-tables.

Its main criticism is of the failure to teach up to the recommended maximum class contact hours, and to switch to the extended college year of 44 to 46 weeks compared with the traditional 36. Also taking into account "virtually automatic" promotion of some lecturers under the Burnham system which leads to higher salary and "unnecessary loss" of teaching hours, the commission estimates it might be possible to teach 75,000 new students in the time now underutilized.

A survey of 150 colleges shows that 31 per cent could produce savings of more than £600,000, while 68 per cent could show savings of up to £400,000. "It will be for the authority to determine whether expenditure

could be reduced by the amounts shown, or services - ie student hours - increased," it says.

Mr Peter Dawson, general secretary of the National Association of Teachers in Further and Higher Education, said: "The commission shows a complete lack of understanding of the basis of lecturers' conditions of service agreements. Lecturers do not only stand in front of the class - they do a vast amount of other duties."

Natfhe, which has been pressing for involvement in the audit process, is particularly angry that the commission apparently fails to take into account the relationship between local and national agreements in adapting the further education service to local needs.

*Audit Commission Report and Accounts for year ended March 31, 1984, HMSO £2.20.*



Tuning up for the future at Newcastle University is the new head of the music department, Professor David Green, pictured at the piano, surrounded by some of his staff. He moves to Newcastle from Queen's University, Belfast, where he was head of music for 12 years. Professor Green has taken over as conductor of the university choir and orchestra and will give his first performance on December 9.

# Principals' deal rejected

Scotland's college of education managers have firmly rejected proposals that principals should negotiate separately from the rest of their staff.

The proposals were circulated in a consultative paper from the Scottish Education Department following pressure from principals of Scotland's 14 central institutions to allow them and their vice principals separate negotiations.

The principals argue they are comparable with managing directors in industry, and should negotiate their salaries either with the SED or the Top Salaries Review Body, and conditions of service with their governing bodies.

The college of education principals made no such representations, but the SED has said that their posts are so similar that any arrangement should apply to both sectors.

However, a meeting of the Joint Committee of Colleges of Education, comprising principals and college governors, has said it is not prepared at the moment to recommend separate negotiations.

Any other response would have been highly inflammatory, since the Association of Lecturers in Colleges of Education in Scotland are imposing a number of sanctions in protest at what they see as delays in introducing national conditions of service.

ALCES this week embarked on the third phase of its withdrawal of goodwill, limiting teaching to 15 hours a week, in addition to restricting assessment and travel to college hours.

The association is angry that conditions of service agreed nationally three years ago have not yet been implemented.

# Social work merger comes a step closer

The proposed merger of social work training awards linking courses taught in colleges with those in universities and polytechnics has come a step closer with the announcement of a consultation programme with final decisions to be made by autumn 1985.

The Central Council for Education and Training in Social Work has fixed a first round of consultations with senior representatives from interested bodies for February next year, followed by a second round of talks in April and May.

The council will be considering a final consultation paper at its December meeting after which the paper will be published. The council has already agreed in principle to work towards a system unifying the current Certificate of Social Services taught mostly in colleges, and the Certificate of Qualification in Social Work, the main qualifying award, taught mostly in universities and polytechnics.

CCETSW first decided to review its training policies in 1981 and after receiving submissions from education institutions and employing bodies decided that the present separation be-

tween CQSW and CSS should not continue, but failed to agree on what changes should be made.

The council has also tried to head off criticism from CQSW teachers that the changes could mean a single system of training, influenced largely by the demands of social services departments.

Miss Priscilla Young, the CCETSW director, has issued a statement saying that a unified system does not mean necessarily an integrated pattern of training.

She said there was no evidence that either the CQSW or the CSS patterns of training are fundamentally unsound. "Indeed both forms of qualification have considerable strengths and will need to build on the best changes of the present system."

Even so many academics are still concerned about the likely outcome, though they now accept some kind of merger had become inevitable.

The first comparative analysis of the CQSW courses operating in 1983/84 has also just been published by the training council. It covers assessment methods, practice placements and the

# Backing for 'Leonardo' academy

from David Dickson

Lord Flowers, rector of Imperial College, London, and the first president of the European Science Foundation, has given his support to the proposal to set up a new European Academy of Science.

The creation of an academy, which would be independent of government and made up solely of individual scientists, was suggested at a meeting in Paris in September by Mr Peter Brooke, under secretary for education.

Speaking in Strasbourg last week, Lord Flowers said that an academy of this type might have an important role to play in European affairs by offering an independent, authoritative voice on scientific topics. He was addressing the tenth anniversary assembly of the ESF.

He said that although the foundation performed some of the functions of national scientific academies - in particular those of the National Academy of Sciences in the United States - its actions were limited because it had become primarily a forum in which government-funded research councils could discuss joint strategies on particular topics.

There would certainly be advantages to the foundation if a separate European Academy of Science was in existence, he added. "It would, for example, be natural if the foundation were to turn to it for the membership of its study groups and committees."

That would make the foundation less dependent on the unfettered judgment of its member organizations, which were sometimes motivated by considerations of national prestige rather than intellectual merit and sound scholarship.

Lord Flowers said that such an academy would also be the natural body to commission some of the state of the art studies that the ESF carried out, and could perhaps receive EEC commission funds "more readily, and more safely" than the foundation.

"I suggest that in the next few years we may see cause to invent an independent body of scholars and scientists, a true academy of Europe," he said. "And if we do, let Mr Brooke have his way and call it after Leonardo."

Lord Flowers also said that he felt it was essential for the foundation to strengthen links with universities, which he described as being "tenuous" even though these were a high proportion of Europe's fundamental research was carried out.

He suggested, in particular, that the ESF should cooperate with the work of the conference of European rectors, presidents and vice chancellors, many of whose individual members already were engaged in negotiations with research councils at a national level.

The CRE met regularly to discuss the many problems facing European universities, including those of research, said Lord Flowers. "But is powerless to find solutions in the absence of anyone representing the research councils."

The ESF also approved the appointment of Mr Michael Posner, former chairman of Britain's Social Science Research Council, as its new secretary general, a full-time post which he will take up in July 1985.



# Why NUS is forcing the issue

On Wednesday November 21, tens of thousands of students at more than 130 higher education institutions took part in the biggest national student protest this generation of students - and probably the previous one for that matter - has seen. And on Wednesday this week thousands more took their protests against Nigel Lawson's proposals for student grants and means-tested tuition fees to the streets of London.

Earlier this month, one day after the education world learned of the plans, I issued the following press statement: "By refusing to meet and talk with us, we can only assume that Sir Keith wants to force students back on to the streets in protest. If that is his challenge, and the only option he leaves us, he will not be disappointed."

Well, at least I kept my word. However, it's important to note that the massive and widespread student reaction the grant announcement has caused is not a threat. It is rather a direct consequence of the arrogance of a man who tells us he does not feel the need to consult on major changes to the student grant system with the elected representatives of over 350,000 mandatory award holders.

Ironically, in the week that students virtually shut down the bulk of the higher education system, I finally got the offer of a meeting with Sir Keith. Somewhat after the proverbial horse had bolted, unfortunately. I hope that he takes the opportunity to listen to, not just hear, what I and tens of thousands of students (not to mention their parents) are saying.

I'll also be meeting with the Conservative backbench education committee in the near future - a meeting prompted by genuine concern, not as an act of tokenism.

We have seen reports in the press of how, as the political significance of the proposed changes sink in, the Treasury are now holding up their hands and pleading innocent. "It wasn't me gunner, it was 10 other blokes!" Oh yeah...

Meanwhile, the backbenchers have to cope with the sight of swollen mail bags of correspondence from potential and certain (so far) Tory voters faced with the prospect of paying out up to £700 extra next year, as well as the vision of Sir Keith hopping around suffering from acute gunshot wounds to the foot.

According to a report in *The Guardian* earlier this week, Sir Keith "is not the most politically astute member of the Cabinet when it comes to sniffing out boobytraps". Well, the backbench MPs have now had the pungent smell of exploded boobytrap thrust firmly under their nostrils.

Student protest today is a commitment to an ideology. The ideology is based on two principles; that every one should have an equal and fair right to a further and higher education, and that students and all those over 16 should be allowed to be independent. The consequence of both these principles is the need for an adequate, publicly financed, student grant.

Among many others the British Institute of Management, whose report was published last Monday, have recognized the need for a minimum grant. At a time when this is being denied to thousands of higher education students and hundreds of thousands of further education students, the report is timely enough. The nation cannot shackle its youth nor can it ignore its protest.

Phil Woolas

The author is president of the National Union of Students.

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## overseas news

## Scientist jailed in rehabilitation of Father Joe



Stalin: not so black

A Lithuanian scientist, formerly head of the Vilnius Laboratory of Thermal Insulation, was last month sentenced to three years in a prison camp plus two years' Siberian exile for slandering the Soviet State.

Dr Ljudas Dombrasukas was convicted on the basis of his unpublished memoirs, describing his ten years in a Stalinist labour camp. Since Dombrasukas was pardoned and rehabilitated in 1955, and his imprisonment formally attributed to a "mistake" of the "cult of personality" his conviction is somewhat surprising.

In recent months, however, there have been a number of hints that Stalin's memory is no longer, in Soviet eyes, quite as black as Khrushchev painted it.

Earlier this month, Stalin's native republic of Georgia was awarded the Order of Lenin, ostensibly as a belated tribute to the 200th anniversary of the incorporation of Georgia into the empire. Conferring the award on behalf of the Soviet Government and Party, Nikolai Tikhonov made a somewhat pointed reference to Georgia's effort in protecting historical monuments - which was interpreted by many as a reference to the preserva-

tion under glass of the humble shack in which Stalin was born, even during the years when throughout the rest of the Soviet Union memorials of the erstwhile leader were daily disappearing.

In August, a leading Georgian military historian, General Irakli Dzhorzhadze, published an extract from his memoirs about the last days of Stalin's eldest son, Yakov, who was taken prisoner shortly after the Nazi invasion of the Soviet Union in 1941, and died in captivity.

This was ostensibly an effort to clear Yakov's memory (he was suspected of having surrendered unnecessarily and collaborating with the Nazis). In fact, it seems designed to present Stalin as a loving father, who urged his son to join the army as an example to the Soviet people.

Standard history records that Yakov enrolled in the Frunze Military Academy in 1935, after his father had virtually disowned him. Dzhorzhadze's version seems intended to clear Stalin of the charge of being duped by Hitler in 1939, and to imply that the non-aggression pact was simply a timely device to enable the Soviet Union to prepare more effectively for the eventual conflict.

During the past few months, this idea has been voiced several times in the Soviet media and in publications intended for abroad. This interpretation of history is important to the Soviets in view of the forthcoming fortieth anniversary celebrations of the end of World War Two.

The Soviets need to rehabilitate him, at least as war leader, if they are to present their case that, in the words of the red army newspaper, *Krasnaya Zvezda*, "the Soviet armed forces played the decisive role in the defeat of the German fascist army."

The new Soviet approach relegates such events as D Day at best to a diversionary tactic, at worst to a "betrayal" of the Soviet Union by the West which held back from a Second Front in the hopes that the Nazis and Soviets would exhaust each other, so that the West would emerge triumphant.

A number of bizarre corollaries have emerged: Jewish leaders such as Chaim Weizmann are alleged to have given tacit approval to Hitler's extermination camps since these would eliminate the non-Zionists who had not opted for emigration to Palestine.

## Economist in call for graduate tax

from Geoff Maslen

MELBOURNE

A noted Australian economist has called for a tax surcharge to be imposed on university and college of advanced education graduates to provide a return on the investment other taxpayers have in them.

Professor Richard Blandy, head of the National Institute of Labor Studies at Flinders University, said graduates should be required to pay the tax levy up to the age of 60 on a scale according to how many years of equivalent full-time study they had had.

The scheme would progressively shift the burden of financing post-secondary education from taxpayers at large to those who had been students, and who had therefore reaped direct benefit in greater earnings or consumer satisfaction or both.

The tax surcharge would bear more heavily on those who had undertaken long training periods which led to high incomes, Professor Blandy said.

The levy collected would be paid to the institution the graduate had attended on a formula which took account of the average contribution from former students and the present student enrolment.

Speaking at a conference at Monash University, Professor Blandy provided a detailed set of radical proposals for reorganizing Australian higher education to make it more efficient, more accountable and more flexible.

As well as the tax surcharge, Professor Blandy called for:

- the reintroduction of tuition fees for students;
- adoption of a system of payment for academics based on competition between them for a share of the tuition money;
- a new system of public and private tertiary institutions which would be free to "engage in activities other than the provision of post-secondary education, training or research".

## Curriculum changes link school to work

from David Dickson

PARIS

The French government has announced a set of major initiatives aimed at moulding the school system more closely to the technical needs of the economy and increasing the work-oriented content of the first compulsory curriculum in an attempt to tackle the growing problem of youth unemployment.

The initiatives include a broadly-based campaign to raise the level of teaching in scientific and technological subjects at all levels, the modernization and reorganization of courses currently offered by sixth form colleges - known as professional lycées - and an expansion of opportunities for those who have left school to return for courses of continuing education.

Details of these plans were presented to a meeting of the French Council of Ministers last week by M. Roland Carras, secretary of state in the ministry of national education responsible for technical training.

M. Carras's judgment has been confirmed by an independent study commissioned by the French government from the Organization for Economic Cooperation and Development.

The OECD report criticizes the excessively intellectual content of much of the French educational curriculum, with the resulting high dropout rate. It suggests a variety of measures for bringing the schools and further education colleges more closely in line with the world of work, including a greater emphasis on technical subjects, reform in the system of educational guidance given to school-

## Patient vents his spleen at UCLA

from Deborah Kasouf

WASHINGTON

A former leukemia patient is suing the University of California at Los Angeles, claiming that two UCLA researchers took unfair advantage of him by using his cells as the basis of research that has led to a patent of undetermined financial value.

Mr John Moore, aged 39, whose blood contains rare properties that may ultimately be used to develop treatments for cancer, acquired immune deficiency syndrome and other virus-caused diseases, is asking to share in profits from any commercial products derived from research on his cells and tissues.

In 1976 Moore, a seafood salesman from Seattle, Washington, had his spleen removed at UCLA Medical Center as part of his successful therapy for hairy cell leukemia.

During his treatment, UCLA scientists David Golde and Shirley Quan discovered that his blood had properties which appeared to provide natural immunity to disease and they successfully developed a productive cell-line.

Dr Golde and Ms Quan filed for a patent on the cell-line in 1981 and the patent was granted in March of this year, assigning ownership of the cell-line to the Regents of the University with the scientists sharing 50 per cent of any system royalties.

Mr Moore's attorney, Mr Sanford Gage, claims that although Mr Moore aligned the standard informed consent granting the university rights to his spleen and to blood drawn for his treatment and for research, his client was not truly informed before he signed the papers.

After the removal of Mr Moore's spleen, Dr Golde continued to see Mr Moore twice yearly for seven years with the university paying for his flights from Seattle.

Moore says that "copious amounts" of blood were drawn during each treatment and that he became suspicious of the value of his blood when UCLA doctors continued to insist upon the visits.

leavers, and extensive changes in the system of examinations.

Many of these recommendations are reflected in the new proposals. M. Carras said he considered "technology and technological education to be at the heart of the challenge of modernization - a key theme of France's socialist government - and that he was seeking to improve the current situation through three related strategies.

The first is substantially increasing the use of computers and other technical equipment in schools and further education colleges; the second theme will involve an upgrading of the courses that are made available in the professional lycées; the third is making the "continuous education" offered by the university and polytechnic centres available to school-leavers and to adults as a "second opportunity" of the education system.

## A for effort awarded to US institutions

from Deborah Kasouf

WASHINGTON

The majority of public college and university presidents responding to a recent survey feel that higher education institutions are doing a "very good" to "excellent" job of educating American college students.

In a survey conducted by Mr Clifton Wharton, Jr, chancellor of the State University of New York, 58 per cent of the 216 presidents surveyed rated higher education today as "very good" while 7 per cent rated it as "excellent".

Graduate education received a "very good" to "excellent" rating by 63 per cent of the presidents, while 55 per cent gave the same rating to undergraduate education.

Markedly lower ratings were given to public universities in the areas of continuing education and public service, with only 40 per cent saying that continuing education was "very good" and only 36 per cent saying the same about public service.

The presidents overwhelmingly cited funding from all sources as the chief problem facing higher education institutions today, followed by equipment replacement and poorly-prepared freshmen.

Support for higher education by the Reagan administration was rated "disappointing" to "poor" by 68 per cent of the presidents, with 64 per cent of those surveyed particularly critical of the level of student financial assistance.

The highest negative rating, 74 per cent, was given to federal support for the arts, humanities and social sciences.

When asked to recommend changes in the Reagan administration's programmes, 84 per cent recommended an increase in support for research, while 79 per cent recommended increases in student aid.

The results of Mr Wharton's survey were presented at the first joint meeting of the American Council on Education and the National Association of State Universities and Land-grant Colleges recently held in Boulder, Colorado.

During the four-day conference, Democratic representative Timothy Wirth of Colorado, said: "Unless we are able to mobilize ourselves and articulate a vision of where this country is going and the kinds of investments we want to make in ourselves, we are going to be dominated by a budget debate and arms control debate and we're going to lose an awful lot else," he said.

The ACE Office of Women in Higher Education presented a report to the gathering which shows that the number of women holding senior administrative positions at colleges and universities has nearly doubled over the past eight years.

In 1975, there were 1,625 senior women administrators throughout the 2,689 accredited higher education institutions in the US, according to the report, but by 1983 that number had risen to 2,824, an average of 1.1 at each of the 2,684 accredited higher education institutions.

Reforms spark heated debate

from Barbara von Ow

MUNICH

Plans for an amendment of the West German university law, submitted by the Bonn coalition government last month, have provoked fierce political opposition and a heated debate among the country's academic institutions. Initial reaction to the draft presented by federal education minister Dorothee Wilms ranged from a qualified approval to outright rejection of a revision of the 1976 university law.

Defending her draft in Bonn last week, Frau Wilms said it aimed at giving universities more independence and flexibility by four crucial amendments - the abolition of the comprehensive university as the sole model for higher education, changes in the personnel structure of university assistants, greater integration of "third means" from trade and industry and greater emphasis on a professorial majority in certain decision-making panels.

Naturally the most positive echo came from the Association of University Professors which welcomed the government proposals as a right step away from the "university reforms" of the 1960s and 1970s. In contrast, the university and polytechnic rectors' conferences gave the draft only a qualified approval, warning against too far-reaching changes which could

spark an "unnecessary revival of the old religious wars".

The response of the various student organizations was equally mixed, with even the Conservative Circle of Christian-Democratic Students (RCDS) giving the draft less than wholehearted approval.

Most fierce, however, was the reaction of the political opposition party. During a recent debate in the Bundestag, the Social Democratic and Green parties accused the government of seeking a "restoration" of the "two class system, feudalism and professional almightiness" of the 1950s.

While the culture and science ministers of the SPD-governed Länder of Hesse and North Rhine Westphalia have left no doubt about their "fundamental opposition" to the government's plans, certain criticism, albeit less vociferous, has also emanated from the Conservative-ruled regional government, indicating that the present draft has little chance of passing legislation without further amendments.

In a first compromise, Frau Wilms announced that the controversial issue of university reform would not be shifted to the Academic Council, which the government would have subject of close cooperation between the culture ministers and rectors conferences.

There is growing concern in America over the increasing number of suicide attempts on university and college campuses across the country.

At the University of Virginia in Charlottesville this fall, three students committed suicide within weeks of each other and five others have attempted suicide since the beginning of the semester.

Georgetown University in Washington, DC, reports that seven students attempted suicide this fall, and at Columbia University in New York City, where stairwells leading to dormitory roofs have been closed off to prevent suicides, a student jumped to his death from a dormitory window last month.

The Harvard University mental health clinic, the largest clinic for students in the country, reports they are booked to capacity this fall and expect more than 2,000 undergraduates to visit during the current academic year.

Although national figures are not available, *Newweek* magazine survey of college campuses last year revealed that one in eight students had considered suicide, and one in

twenty had attempted suicide at least once.

Educators, aware of the growing problem, are beginning to search for the reason why some of the current generations "best and brightest" are losing their will to live.

Dr Layton Whitaker, director of psychological services at Swarthmore College in Pennsylvania, believes there are greater pressures on today's generation of college students than on those of the past.

"The threat of nuclear war is more serious for this generation, and the incidents of broken homes are higher," he said. "And this generation faces more difficulty in finding jobs, as well as increased competition getting into professional schools."

Dr Richard Carlson, Columbia University's director of student health services, feels that in addition to stiffer competition for fewer jobs, the rising cost of a college education, the "enormous pressures" to today's college students.

Swarthmore College reports attempts, but no successful suicides, over the past 10 years, and Dr Whitaker credits this to excellent mental health facilities as well as a good resident advisor system in student dormitories.

## overseas news

## Nordic students 'worse off than ever'

from Donald Fields

HELSINKI

A survey compiled by the Federation of Swedish Student Unions, in conjunction with the Board of consumer Affairs, contends that loans and grants extended to the average Swedish student in 1984 fall 282 a month short of his or her outgoings on accommodation, food, scholastic material, course fees and sundry items.

With state assistance slipping in real terms below the "subsistence-line" benchmark set in 1981, the federation claims that its members have never been worse off. They are obliged to spend more and more evenings and lengthier segments of vacations to finance their studies, resulting in shoddy academic standards and delays in obtaining degrees. The remedy suggested is a boost in government support.

The report comes on the heels of a proposal by the national board of universities and colleges that would make it mandatory for students who fail their examinations after four attempts in theoretical subjects and two attempts in prac-

tical ones to quit universities. At odds with the Nordic custom of giving examinees almost unlimited chances, in the belief that the incompetent will sooner or later drop out, the idea appears directed primarily at those who succumb to drug addiction, alcoholism or mental illness. It is suggested that a board independent of the universities would adjudicate in cases where the authorities propose discharging students.

This autumn has brought news that a growing number of gymnasium (senior secondary school) pupils in Sweden prefer to take up jobs instead of entering universities immediately after matriculation. This applies primarily to those with a bent for the humanities and the social and natural sciences: economics and technology, by contrast, still have a strong pull thanks to the career opportunities they provide after graduation.

Part of the explanation lies in the fact that some matriculants choose to work before embarking on a degree course since the experience provides them with more weight on the points-graded qualification scale for univer-

sity entrance. The trend comes amid evidence from the latest student intake in Stockholm suggesting that getting into a university is not so hard as it has recently been feared, with several faculties admitting a pool of reserved by dropping their points threshold.

In Denmark, students have found a most vivid way to protest against the 12 to 13 per cent rates of interest charged by the banks that grant them loans. Several activists of both sexes appeared stark naked on the balcony of a bank in Copenhagen's most fashionable quarter, above a banner proclaiming "the banks strip us to the skin".

Subsequently, fully-clothed squads of demonstrators have pushed their claims for interest-free or state-subsidized loans by invading banks with gestures so menacing that the police have been called in.

According to official calculations, 10 per cent of Denmark's students will start 1985 owing the banks more than £11,000 with more and more in debt to the tune of double that sum. One former student revealed that she owed £32,320 when she graduated this year

after 12 years, struggling for much of that time to bring up two children alone.

Revelations that many Danes are in debt for life thanks to the spiral of high interest on the loans they incur as students underline the difficulties of universities in functioning smoothly and maintaining standards when their charges cannot wholeheartedly apply themselves to academic disciplines.

Pointing out that students are doing the equivalent of 30,000 to 40,000 jobs to finance themselves while overall unemployment remains high, Denmark's largest morning newspaper, *Politiken*, suggested that some of the £221m to £296m disbursed yearly in unemployment benefit could be diverted to make it pointless to work while studying.

In Finland the loan issue has taken a backseat to the grim question of student accommodation, but one letter to the country's leading daily, *Helsingin Sanomat*, complained of a 150 per cent increase in bank charges on admittance loans. Giving vent to widespread sentiment, the letter was headed "Students are legally robbed".

## Granada takes the lead in Spanish reforms

by Sarah Jane Evans

MELBOURNE

Granada University is to appoint an ombudsman to represent the interests of both students and staff as part of the university's plans to implement the *Ley de Reforma Universitaria*, which has already caused a number of upheavals in the hitherto relatively peaceful world of higher education.

Spain's other universities are not rushing to copy the idea, and it looks as though Granada's ombudsman will be the only one in the country. It is intended to give the ombudsman wide powers, and he will report annually on the complaints he has received to a Council of 300 staff and 100 students.

Granada is also considering a proposal that the university's governing body should set up a commission to evaluate the research and teaching activities of the staff.

Every university has been considering the implications of the LRU requirement that each institution should have a social council. While the left see it as a way of broadening participation in the universities, the right are condemning it on the grounds that it will bring party politics into the universities. The councils will approve the universities' finances and their long-term spending plans, supervise their economic activities and decide on opening and closing faculties and where vacancies should be filled.

The six autonomous regions - Catalonia, the Basque Country, Galicia, Valencia, Andalusia and the Canaries - have each decided how their councils should be composed, following the LRU's guidelines, while universities in the remaining parts of the country will follow the education ministry's model.



Professor Malcolm Skilbeck

## British academic goes Down Under

from Geoff Maslen

MELBOURNE

Professor Malcolm Skilbeck, professor of education and head of curriculum studies at the University of London Institute of Education, has been appointed vice chancellor of Deakin University, near Melbourne.

An expatriate Australian and former head of the Australian Curriculum Development Centre in Canberra, Professor Skilbeck has held posts as director of studies of the Schools Council for Curriculum and Ex-

aminations for England and Wales, and as dean of education at the new university of Ulster.

Well-known in Britain and Australia, Malcolm Skilbeck, 52, has worked as a consultant to the British Council and the Open University as an adviser, course team member and external examiner in the faculty of education. He is chairman of the World Education Fellowship and is a member of the management committee of the Council for Education in World Citizenship, among numerous other bodies.

## US concern over rise in campus suicide attempts

from Deborah Kasouf

WASHINGTON

There is growing concern in America over the increasing number of suicide attempts on university and college campuses across the country.

At the University of Virginia in Charlottesville this fall, three students committed suicide within weeks of each other and five others have attempted suicide since the beginning of the semester.

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## OECD attack on youth unemployment

from David Dickson

PARIS

The education ministers of the 24 member countries of the Organization for Economic Cooperation and Development, meeting for the first time in six years in Paris last week issued a statement jointly committing themselves to looking for ways of adapting all levels of education and training to the needs of a rapidly changing economic, social and technological environment.

After two days of discussions a statement was issued on the general theme of "educational challenges facing Western industrialized nations," by the chairman, the French minister for national education, M. Jean-Pierre Chevènement.

Although it was expressed in broad generalities with few surprises or new ideas, its existence is being interpreted as a recognition by all the OECD countries of the key role that education must play in addressing one of the critical economic and social problems faced by each of them - youth unemployment.

M. Chevènement said there had been a divergence of views on several topics, such as whether educational systems needed additional resources to

meet the new challenges, and whether the salary of teachers should vary according to an assessment of their professional effectiveness.

However, there had been a general consensus on several important points. One was the need to emphasise the quality of basic education as an essential component of cultural and economic progress; another was to bring closer together the worlds of education and work at all levels.

The statement reflected the ministers' basic agreement on these and other related points, arguing that although education could not be a substitute for economic and labour market policies, the rapid pace of economic change and the spread of new technology called for a fundamental re-examination of the role of education in preparing the young for working life.

They recommended that special consideration should be given in all OECD countries "to the status, organization and content of vocational and technical education and training, and to effective school and vocational guidance."

At the same time, the ministers said it was "essential to sustain higher education as the source of independent inquiry and advanced learning".



## How unions hold back bureaucracy

Canada's universities experienced a period of rapid growth of students and academic staff as well as of operating revenues and expenditures during the 1960s and early 1970s. Almost overnight university administrations were expected not only to deal with multi-million dollar budgets but also to do so efficiently by governments who were now supplying most of the money.

Employment relations also changed. The paternalistic and often benevolent form of labour relations gave way to a more formal and managerial style of decision-making.

In Canada many local staff associations reacted to new conditions by moving towards formalizing the relationship with the administration. This formalization included not only a formal regulation of how and when bargaining occurred but also resulted in formal and comprehensive agreements.

The purpose of such formalization has been to secure an equal place in the formation of personnel policy and more importantly to entrench (or in some cases to establish) collegial values and processes. In some cases, a local staff association, confronted by an intramural administration, has sought registration (known as certification in Canada) as a labour union from the provincial government. In other cases the association has sought to regulate the relationship through an agreement outside a provincial labour relations act.

In response to concerns that bureaucratization was once more on the rise the Canadian Association of University Teachers' Academic Freedom and Tenure Committee decided to investigate the situation by sending out a questionnaire to all CAUT local branches.

There was general consensus that management style was a major source of friction and that in the context of financial restraint administrations were trying to follow industrial models of management. Moreover, most staff associations thought that participation of academic staff on important boards of governors or regents was "ineffective" or "very ineffective".

Again there was agreement that there was an excessive number of administrative staff.

When asked, however, whether the relationship between the administration and academic staff was a satisfactory one two thirds of the unionized associations stated yes, whereas two thirds of the non-unionized associations said no.

Another significant difference appeared when the locals were asked whether there had been any administrative process. Eighty per cent of the unionized staff associations indicated that there had been none or very little encroachment; whereas 90 per cent of the non-unionized faculty suggested there had been some or a great deal.

Although the survey was intended to assess attitudes and perceptions it would suggest that the advocates of unionization may have been right: unionization retards the administrative instinct to bureaucratize (simplify?) decision-making by altering the power structures.

Ron Levesque

The author is associate executive secretary (collective bargaining) of the Canadian Association of University Teachers.



# Raising the roof

Olga Wojtas joins St Andrews students in their celebration of a unique custom

"We've both got the same mum. That's why we're tied together. Yesterday, our mum gave us a tea-party, and our dad tried to get us drunk. Our mother and father didn't meet until last night, but some people's parents haven't met at all."

Life at St Andrews University is enough to make the most hardened agony aunt flinch. Especially as the young female speaker is wandering about on a chilly November day clad in little more than a cotton shift and a sack, and is attached to a large cardboard box from which two little eyes are peering nervously.

"I'm Patrick Hamilton," says the young woman. "And this is St Salvator's Tower." St Salvator's Tower, a morbidly-minded mother - Hamilton was a sixteenth century reformer who was burnt at the stake outside the tower. The authentic tower has the imprint of a face on it. This is said to be the mark left by Hamilton's soul when it crashed against the tower while flying up to heaven.

One of the innumerable St Andrews' student traditions makes it unlikely to stand on the spot where Hamilton was martyred. Students who do so will fail their exams. They will also fail their exams if they fasten the clasps of their scarlet gowns, which are worn on Sundays, at formal dinners and various university events.

There is strict protocol governing gowns. Bachelors wear them normally. Semis, second year students, wear them off the collar. Tertiaries, third years, drop them off the right or left shoulder, depending on whether they are arts or science students; and magistrates, fourth years, wear them slung round the elbows. The gowns were allegedly introduced last century so that students could be identified if they went into pubs.

On Ralsin Monday, fathers attempt to rival the mothers' inventiveness of costume with bizarre receipts. Bachelors are obliged to carry these for inspection by tertiaries and magistrates, and can be weighed

down by sunbeds, fire extinguishers or rusted car doors. Linking of brothers and sisters need not only be matrilineal: one father this year had the happy thought of giving his son and daughter a set of stocks.

Receipts are still written in Latin and their grammatical inaccuracy is due to mischief rather than ignorance. If tertiaries or magistrates discover an error in the receipt, they can demand that the bachelors sing the university song "Gaudemus Igitur".

Failure to do so used to result in the bachelors being hung from a fountain which has now been filled in.

But no forfeit could match the indignities the bachelors insist on inflicting on one another. After acquiring their costumes and receipts, they gather in the quad and cover one another with flour, eggs and shaving foam. A ghost covered in a sheet has absolutely no complaints about her mother's choice of costume. "It keeps me clean, and nobody knows who I am when I attack them."

The quad is filled with a whooping mob. A notice at the entrance threatens that a £25 fine will be imposed for irresponsible behaviour.

Ben Stocks, stresses that the only criterion for entry is what a student has done for the university. The club raises around £8,000 for charity each year through events such as a Christmas pantomime, an archery competition and fun run.

St Andrews has retained an extraordinary number of traditions compared to other institutions. Ben Stocks believes this is a result of the town's geographical isolation.

The less charitable or more chauvinistic might claim it is a concomitant of St Andrews having a large number of English students, many from public schools. But whatever the reasons, the traditions show no signs of disappearing. The midday chiming signal an end to this year's Ralsin Monday frolicking.

Outside, a woman is holding a placard reading: "Be not drunk with wine but be filled with the spirit." This turns out not to be a facetious receipt - she is the local evangelist. She is standing close to the spot where Patrick Hamilton was martyred and her patient smile does not waver as she is systematically covered in shaving foam.



Ralsin Monday: a mixture of ingenuity and mayhem

This is obviously an attempt by St Andrews to make up the University Grants Committee cuts.

A bee launches a kamikaze attack on a packet of Dispair and is covered in flour. A Christmas cracker turns out to be a French lecture who has persuaded two of her students to adopt her. Her own university is the Sorbonne and, as she gazes at the melee from the comparative safety of the cloisters, the scene is undoubtedly reminiscent of 1968.

A November downpour adds to the mayhem, disintegrating costumes and turning the floor into paste. But members of the Kate Kennedy Club, who are responsible for clearing up afterwards, are relieved. At least there is no oil. Not to mention the green porridge.

The club volunteers to clean up, but there is a tacit understanding that if it did not the Ralsin Monday festivities would be jeopardized. Despite this altruism, the club is not universally admired. It is all-male and self-selecting. Of the 150 bachelors who apply annually, only nine are accepted.

The club's president, magistrate

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ments have been made to safeguard students' fees and advance payments for accommodation and catering charges, that their welfare is being considered and that the legal and financial status of the college is satisfactory before it begins to examine staffing levels or teaching arrangements.

They will be considered by an inspectorate headed by a recently-retired senior member of Her Majesty's Inspectorate who was actually the DES advisor to the committee which set up the BAC. Officers of help from other retired inspectors and serving lecturers in colleges and polytechnics have been in unexpectedly ready supply. The duration of inspections, like the size of the team of inspectors, will depend on the nature of the institution.

The charges may seem steep, but they will be a good investment if recognition by the BAC becomes a seal of approval well-known to those considering a place at a private college. The British Council has agreed to distribute literature about the association in its offices overseas and other steps will be taken to make the BAC's work better known when the operation is fully under way.

As a limited guarantee company with charitable status, there is no option but to set fees at an economic rate. A grant of £29,000 from the Nuffield Foundation will see the BAC through its first year, but after that it will depend for its survival on its own success in making accreditation soundly necessary to attract students that more and more colleges are willing to pay for the services.

With probably a third of the students at private colleges coming from overseas, there is an important job to be done in restoring the image of British education abroad. And, with some 20 private institutions of 1,000 students or more, added to a vast and diverse network of smaller colleges, it will be no small undertaking.

John O'Leary

Jon Turney reports on a conference in Ghent to mark the centenary of scientist George Sarton

## Tribute to a vision of greatness

The centenary of the most celebrated European historian of science was marked by the largest gathering of academics from the growing "science studies" community ever seen in Europe. More than 250 delegates gathered in Belgium earlier this month to honour George Sarton, a pioneer in systematic study of the growth of science, and to swap accounts of their own work in history, philosophy and sociology of science and science policy.

They came to the medieval city of Ghent, Sarton's birthplace and home of the university where he studied until the First World War. The university, one of four in Belgium, hosted the meeting, which brought together members of the American Society for Social Studies of Science (AS3), its European equivalent, the European Association for the Study of Science and Technology, and the Ghent-based society called Communication and Cognition.

Sarton would have been heartened by the size of the gathering, by the diverse reception and commemorative exhibition, the attention from Belgian radio, and the other memorial meetings in the United States, where he held a chair in history of science at Harvard at his death in 1956. But he would have been heartened most of all by the diversity of research reported at the meeting, from studies of

the social construction of scientific knowledge, through evaluation of scientific priorities by policy-makers, to science education and the role of expertise.

The range of work would have fitted in well with the perspective of the founder editor of *Isis*, now mainly in a journal for history of science, but conceived by Sarton as "the philosophical review of scientists and the scientific review of philosophers, the historical review of scientists and the scientific review of sociologists".

However, other elements of Sarton's beliefs are less well reflected on the contemporary scene. His conviction of the overriding importance of the history of science, for which he gave up a promising career as a practising scientist, is not borne out by the prominence of the subject, in academic life. Arnold Thackray, the current editor of *Isis*, points out that America supports more historians of the Supreme Court than historians of science.

More poignantly, Thackray contrasted Sarton's vision of history as the evolution of human greatness, and of the history of science as the

study best reflecting human progress, with the experience of the twentieth century. And in truth although Sarton's work was in this century figure, as befitted a man born before the conception of relativity, nuclear weapons or genetic engineering.

George Sarton's faith in the progressive power of science came from August Comte. As a young man he became a socialist, and dabbled in philosophy and literary work before electing to study science. Even in science he found it hard to confine himself to one discipline, and his PhD from Ghent for a thesis on Newtonian mechanics came only three years after winning a national medal for his work in chemistry.

But this was the end of his career in science, for he almost immediately abandoned scientific research for the documentation and systematic study of all the sciences. His long-standing concern for the intellectual and moral uplift of the working class was now extended to all mankind. He set himself two tasks, to prepare a survey of the scientific knowledge available in every branch of science at each period, and to edit a journal for history of science. When *Isis* was

launched in 1911 he wrote, "living history, the passionate history of the physical and mathematical sciences is still to be written".

The programme he set himself for the rest of his career was founded on Sarton's concept of the "new humanism", which he described as "the humanization of science or rather its reintegration with the other elements of our culture". The new humanism soon took a knock with the outbreak of the First World War, and Sarton emigrated to the US after a brief stay in Britain. Here he eventually settled in Harvard and *Isis* relaunched in 1924 at the same time as the History of Science Society.

Although Harvard offered Sarton a home it did not exactly welcome him with open arms, and he had to wait until he was 56 before assuming a chair. He was, by all accounts, a distant figure, immensely erudite but with a forbidding reputation. Professor Robert Merton, the American pioneer of sociology of science, described going to see Sarton as a graduate student in the early 1930s, when he was seen as "a remote austere and awesome presence". But Merton found him less abrasive than his reputation suggested and he was

drawn into the Sartonian project and the prolific correspondence which sustained it.

"I liked Sarton even when he was having at me for departures from the Comtian faith," he told the meeting, during a long affectionate tribute to his mentor of half a century ago. The Belgian eventually subsidized publication of Merton's now celebrated thesis on the role of Protestantism in the rise of modern science.

Professor Merton's presence in Ghent was a reminder that, Sarton aside, many of the founders of social studies of science are still active. A second reminder came with the other main item of formal business aside from plenary tributes to Sarton, the award of 48 John Desmond Bernal prize to Dr Joseph Needham.

He and his collaborator of 45 Lui Gwei-Djen, journeyed from Cambridge to be honoured at the conference banquet, a fitting tribute to the only other historian of science whose work rivals Sarton's in scope, or even exceeds it. And if historians are sometimes over-conscious of their own subject's past, Needham's own sweep of recollection about the growth of his project to record the growth of scientific knowledge in China both satisfies this urge and offers a corrective. For like *Isis*, publication of *Science and Civilization in China* still continues.

## Turning words into facts and figures

George Sarton produced words, more than most academics would care to contemplate. And words are still the main end product of most academic work. This is an annoyance to many policy-makers, who have to divide up the money between universities, departments, or research groups. Words are slippery, and so are the things, the stuff of misunderstanding and arguments. Life would be much easier if one could turn them into numbers.

A substantial group of the science studies and research policy community is now doing just that, chiefly with the aid of Eugene Garfield's *Science Citation Index*. The Index, which records authors' names, publications, and papers cited in a massive set of journals in the sciences, social sciences and humanities, is founded on an ever expanding database in Philadelphia. And although it was designed as an aid to literature searching for working scientists, as Dr Garfield emphasized at a meeting at the Royal Society in London last week, it is being used more and more for studies of the structure and growth of scientific disciplines.

A range of the uses of publication and citation analysis were on display at a session of the Ghent conference devoted to "scientometrics" as this band of computer buffs and enthusiasts for quantification like to call their work. They include detailed analysis of who cites whom, to reveal patterns of influence within and between fields, or "cognitive maps". A key tool here is examination of co-citations, on the premise that if two authors cite the same paper in their work, their own research must be connected in some way. Other studies reported in Ghent covered ages of citations in different fields, and research on whether elite scientists refer to the work of other high-status researchers.

However, the recent surge of interest in the field stems from work intended to have more direct use for policy. Trials of the value of weighing publications and citations are now under way at national, institutional and departmental levels, and decision-makers seem eager to get their hands on the results. Much of this work is being pioneered in Holland, and two impressive Dutch studies go far to illustrate the advantages and pitfalls of citation indicators.

Cornelius La Paix and his colleagues in the Netherlands physics research council have used the new techniques to test a Dutch variant of the peer review system. In Holland grant applications in basic physics are examined by referees and specialist committees, as in this country. But all the comments made are then laid before a separate panel, still physicists but described as "laymen" because they come from different fields, who put 20 or so proposals at time in rank order.

The Dutch wanted to see if the panel's judgments of scientific quality are borne out by subsequent performance of the various research groups. So they tried to "calibrate" peer review by following the publications of successful grant applicants. This is a long-term question, so the research council group recently looked at projects submitted before 1976 where a graduate student worked for four or five years backed with cash for materials and equipment. They wanted to know if the original jury marks fitted later results from a set of bibliometric indicators - the number of articles written by the researcher holding the grant, the total number of citations to those

papers in the literature (excluding self-citations), and the same measures corrected for partial authorship of co-written papers.

Fortunately, perhaps, the results show a good correlation between jury rankings and the later assessment of the scientific community recorded through citations. Professor Le Paix's group concluded that the panel judgments are quite good predictors of research performance.

So far, so uncontentious. But what about using publication studies to look at research outputs from individual university research groups? This is precisely the goal of bibliometric enthusiasts in another Dutch group at one of Europe's largest research universities. If Britain's University Grants Committee is stuck for ideas about how to develop its newly declared policy for more selective research support, members could do worse than visit the Research Policy Unit at the University of Leiden, where a four-strong team is nearing the end of a comprehensive three year study of work done in the faculties of mathematics and natural sciences and medicine.

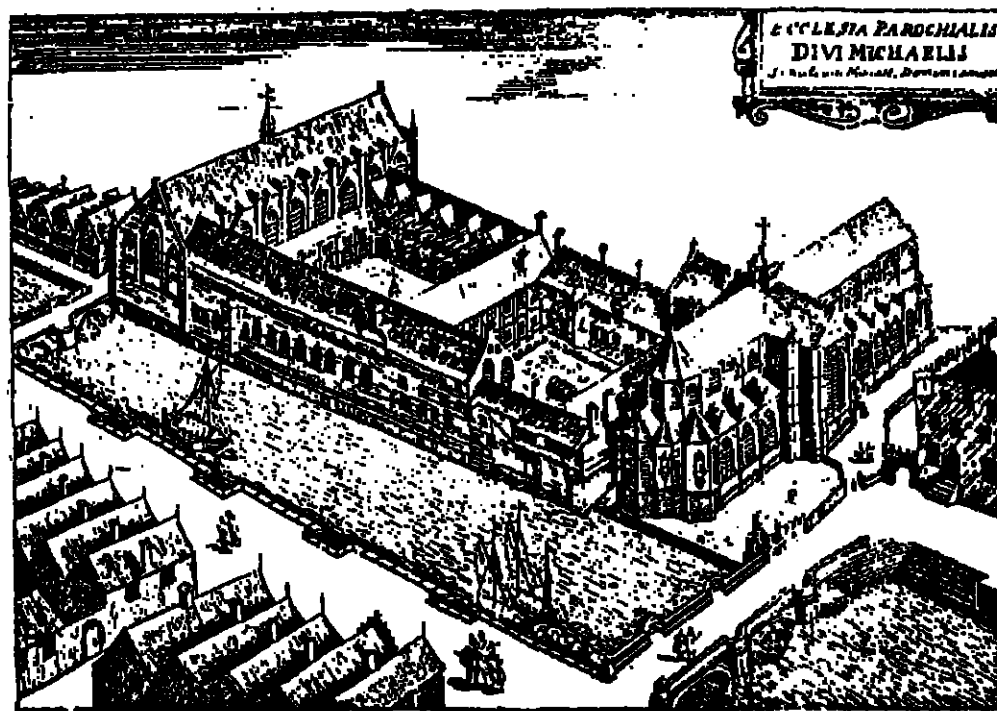
The Leiden study stems from familiar changes in research funding in Dutch universities. Leiden was one of the first to abolish the former link between student numbers and research money going to departments, and invite faculties and departments to "earn back" the money by demonstrating the quality of their research projects.

The Dutch government has since changed the national system along the same lines, and paid for the Leiden study in the hope of developing new tools for evaluating university research. The Dutch group ordered a list of all publications with Leiden addresses from the Institute for Scientific Information's files for 1970 to 1980. For around \$40,000 they got details of 6,700 publications and 42,000 citations of these papers, which they estimate represent the output of 4,000 academic years work, using \$400m worth of grants.

### Distinguishing between the short and long-term impact

The Leiden researchers want to establish the value of bibliometric studies on two grounds. First, they distinguish between short and long-term impact of publications, as shown by citations. They suggest short-term impact is mostly relevant for university research policy, partly because the ultimate durability of research findings takes far too long to assess to have any bearing on funding decisions. But they also point out that while it is not fair to ask researchers to do work with a long-term impact, it is reasonable to urge them to carry out studies which make some short-term impact on others active at the "research front".

The second argument behind the work is that measures at the level of faculties or departments are useless for aiding policy decisions in the university. Only looking at individual research groups reveals the crucial differences in performance, say the Dutch. And they believe their analysis at this level is reasonable, providing the compilers take great pains to acquire complete lists of what may be a small number of citations.



The original buildings of the University of Ghent

The indicators they calculated for research groups in the two faculties studied how trends in impact, derived from measurements for each year of the decade studied. The basic assumption is that movements in these trends reflect the rise and decline in influence of different groups. And the vast number of individual graphs produced do seem to display an impressive sensitivity - even down to spotting rising trends in the year or two after a new professional appointment.

However, the Leiden group's report also illustrates the many problems with this kind of assessment. They include the coverage of the ISI database, which varies widely between disciplines, the publication practices of different groups and researchers in different subjects, and the sensitivity of the group trends to small errors in publication lists - whether publications missed or wrongly counted in. In fact, the group insist that no-one should attempt to draw any conclusions from such a fine-grained analysis unless they can guarantee to catch 99 per cent of all the relevant papers.

Even if this standard is met, the figures still require very careful interpretation. Some clinical medical researchers at Leiden publish very little in the journals because of their medical duties, for example. Dutch taxonomists, who account for many of Leiden's biological papers, mainly publish in Dutch language journals, which are not included in the *Science Citation Index*. And one famous number theorist in the mathematics department publishes almost exclusively in a Polish journal, also not recorded.

In fact, mathematics was the hardest field to work through, because of poor coverage of the Leiden group's favoured journals by ISI and because there tend to be fewer citations per paper. It was also the field which led to most disagreement with the researchers whose work was scrutinized when they saw the impact results. But here, as elsewhere, the research policy group maintain the trends they find are at least a basis for discussion, a point which most of the university's scientists accepted.

The discussion can take many turns, including explanation of unexpected results, needs about

how to increase publication impact by publishing in different journals, or different languages. And nationally, in contrast to Professor Le Paix's study, the Leiden impact measures rarely agreed with peer review by high-level survey committees.

### No direct link between findings and funding choices

Ultimately, though, the discussion will be about money. The results of the bibliometric work will be laid before faculty research committees, but it is too soon to say what effect they may have. The policy group researchers stress there can be no direct link between their findings and funding choices. As Eugene Garfield has written on attempts to use citation counts for review of individual applications for tenure in the US, reviewing a list of citations is no substitute for reading the papers concerned.

The Dutch suggest their techniques should be seen as a useful adjunct to existing ways of monitoring research. They make no apology for taking impact into account, as they argue it is part of a university scientist's job to communicate results to others. But they do not offer it as a panacea for the new problems set by reorganization of university funding in Holland.

They would probably agree with Mr Peter Healey of Britain's Economic and Social Research Council, at the end of a presentation in Ghent about the recent study of similar techniques for our Advisory Board for the Research Councils. "There seems to be a minor crisis about the use of science indicators for policy-making. These methods can be used to describe science content and place it in context. Their power to do this suggests their use for direct evaluation of the quality of competing fields and institutions, but it is too easy to do this in a simplistic way that leads to spurious use of scientometric evidence to support policy conclusions needed on other grounds."

## Giving credit where credit's due

Until 1982, the Department of Education and Science offered a recognition scheme, which provided some guide for the intending student. But the department did not claim that its irregular inspectors provided any guarantee of quality of courses and it operated within strict limits regarding size and type of programme. Nevertheless, it was a blow to those colleges which saw the scheme as a mark of respectability when the Government decided that it could no longer afford to operate the service.

Now the gap has been filled and the

potential is there for a much more satisfactory scheme. The British Accreditation Council for Independent Further and Higher Education (BAC) has emerged from two years of discussion and planning by all the interested parties, both within the private sector and outside it. Initial talks were set in train by the British Council and the DES also offered its advice before the association was launched publicly this month.

It got off to a good start by persuading Lady Plowden to become its president, providing an immediate indication of academic seriousness. And it has also made something of a catch in appointing Mr David Parry, who organized a government commission on higher education in Papua New Guinea, to be the executive secretary. Mr Parry, who previously headed a teacher training college, is the only full-time employee apart from one secretary.

He was attracted by the prospect of starting from scratch and implementing a scheme in the way he had done in Papua New Guinea and sees the new venture as a good vantage point to observe British higher education as a whole. Although he himself has never worked in the private sector, Mr Parry hopes to give wider currency to his belief that private colleges make a significant contribution to the educational world.

His problem - and a large part of the reason of the BAC - is that the colleges generally make the news only when there is a scandal. There is no doubt that there is a disreputable element in the private sector which continues to prey on gullible students, particularly those from abroad. Although the new association is not intended to deal with individual complaints, Mr Parry received six in his first two weeks in office.

In one case, a student had paid

£2,000 for a course which turned out to entail only a fortnight's residential tuition followed by project and individual study work with minimal and unsatisfactory supervision. Similar stories are recounted regularly in foreign newspapers, like the recent case of a Cambridge college said to have charged £2,000 for a course which lasted less than a month in all. Other complaints centre on the precarious financial position of many colleges and the frequent examples of students losing large sums when institutions go bankrupt.

The stable and reputable concerns, which are in the majority, have tended to be tarred with the same brush, which is precisely why many of them welcome the advent of the BAC. A dozen colleges applied for accreditation in the association's first fortnight and the BAC is hoping for at least 100 in its first year.

To receive accreditation, a college has to pay an initial fee of £150 and send supporting documents to show that it is suitable on both academic and financial grounds, after which it will be inspected by at least two qualified members of the BAC inspectorate, whose recommendation will be put to an accreditation and recognition committee.

The college, in addition to its eligibility fee, will have to meet the cost of the inspection and then pay £3 per student per year for inclusion in the association's lists. Accreditation will be for five years but the college will have to submit annual reports to show that it is still complying with the BAC's requirements.

No college will be considered until it is at least two years old, a step intended to provide some guarantee of stability, and almost as much attention will be paid to the financial set-up as to academic standards. The association will want to be applied that arrange-

### In September The Times Higher Education Supplement

published a 4-page analysis of the joint statement from the University Grants Committee and the National Advisory Body regarding the basis for considering the present and future role of higher education in our society.

Copies are available at 30p each\*. Please make your cheques/postal orders payable to Times Newspapers Limited and send to:

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## Bernard Crick



### Better not tell the whole truth about the council

Repaying old debts shamelessly, I worked "British Council" into a heading earlier in the year; but the paragraph praising them was cut. My own fault, I went over length. I've no quarrel with the sub-editor. It was an obvious cut being obviously tacked on to something else. I forget. Always put your inordinate stuff in the middle of a paragraph.

But this week the council will be central. It too has had the misfortune to be celebrating 1984, in its case as a fiftieth anniversary, in the case of the Orwell industry by accident. A month to go and we are safe: those six *hasadim* in Paris in continuous prayer since last December (or rather, I assume, praying in turn continuously) have done the trick and staved off the end of the world, the final date of *Omaga* which they found in the *cabala*.

I will only digress to reproach my old friend John Savile for writing in three issues ago to urge that a fundamental debate on the tutorial relationship should follow my very serious piece about the bad consequences for us all if the poor old North London Poly tutors are finally ordered by the courts, to betray, peach, rat, sneak, squeal, spill the beans, blow the gaff, or, in plain Irish, inform. Why is our double-tongued tongue so rich in synonyms for treachery? I'm all for fundamental debates, but I bridled at his calling the heading "Better not tell the whole truth about tutorials", "flippant". And, for once, it was my flippant.

John, why flippant? Are you as an historian any more fond of "ideal types", in Max Weber's sense, than I am as a disciple of Machiavelli (of the *Discourses*, not the *Prince*)? I was not flippant but prudent. If society has an ideal image of the tutorial, we should at least encourage judges to see tutors as other than police or butted-out vigilantes. I could tell bizarre tales about what can actually happen in real tutorials, or sad ones that end "I've never even met him", that would bring tears of laughter to our eyes as the knives of the Department of Education and Science hitmen sink into our momentarily-unguarded backs.

"Human, all too human", that's all, like the army, the police, the miners, and Mr. Heseltine's speech-writers. Perhaps even the British Council. The basic trouble is that cock-ups and anomalies are so much funnier, memorable, newsworthy and indicative of the basic decency and imperfection of human beings, than the official versions that portray smooth-working bureaucracies staffed by ideal types of self-leaded robots.

I admit that if I had been in the British Council during the last decade of Lord Beaverbrook's reign at the *Daily Express*, I might never laugh again at jokes about unworthy poets, modern art, Morris dancing, long hair and expense accounts. Even Mr. Dooley once said that he never laughed again at Chinese jokes in the music hall after the result of Port Arthur came in on the telegraphs. Lady Donaldson's recent *The British Council: the First Fifty Years*, is mainly pretty serious administrative history (as "it fills a huge gap" kind of book). Her research worker, as she freely acknowledges, did all the research; but she brings it to life with spluttering rage whenever the name of Beaver or his paper have to be mentioned, as in honesty they must.

In honesty they admit that immediately post-war the British Council did go through a bad patch. It was uncertain if it would continue. There was no proper pension scheme. Salaries were poor, contracts short-term.

But people had to be found quickly to go out into the world and represent British culture.

Let me cheer them up with *schadenfreude* and flippant honesty. When the Robbins report went off so suddenly, there were, amazing to remember (younger teachers must think we are senile, John) similar shortages of talent. Young officers were hurried straight up to the front without even basic training. They (or their students) learned the hard way.

I can remember (and there are living witnesses) going to lecture in Robbins year two at the University of \*\*\*\*, no names, no pack-drill, but for devotees of *The Times*, four letters beginning with "H". The professor developed a migraine, so young staff took me drinking with the student committee. After an hour I said that I thought my hosts were a pretty rotten lot in doing nothing but discuss in front of the chairman of the student club got off the floor and reproved me. "Don't be hard on 'em, Dr Crick. It's something we often discuss among ourselves, whether 'tis better not to have gone to university at all than come to H\*\*\*\*. But I've thought about it a lot, and I think it is much better to have come to H\*\*\*\*. Things are now, of course, very different."

Actually most of the council's field officers I met in the 1960s and early 1970s, at summer schools in Germany, Austria and France, were admirable types, marvellously representative of the different cultural stands of our nations in the UK, and grimly adept at making a little go a long way. Not being of them, the customers would talk about them to me. Very rarely did one hear a bad word of a lazy, incompetent or obsessive person; far more rarely, I must honestly say, than in the universities where "performance criteria" are so harder to find, agree or impose.

It is a great and very influential branch of the public service. The treatment of it, by populist politicians, the popular press and the *Treasury* is a glittering illustration of the philistinism of our public life against which Mill, Arnold and Lawrence railed in vain. Most of the council's work is not now in cultural fields, but acting as agents for the Ministry of Defence in technical aid - useful, indeed, but that is how it survives.

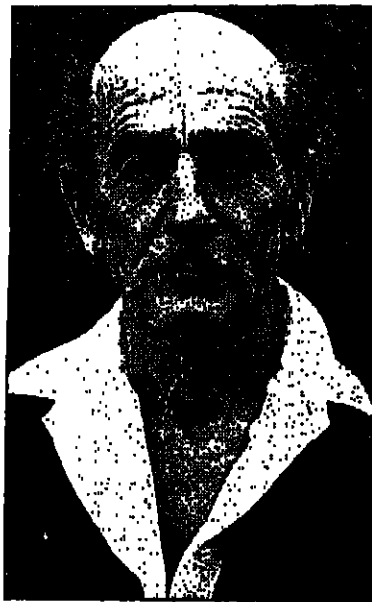
It is supposed to be clever to put this argument in economic terms. I think it can. We all know it. But it sells the real case short: that these institutions best represent what is best in Britain. But the Podsnaps, the Butts and the Lawsons, actually dislike that Britain, the combination of critical intelligence and culture; to some extent they feel threatened by it, and they always grotesquely suspect these institutions of being covertly socialist.

Socialists know better. Lady Davidson concluded her anniversary book with a splendid tribute to the wives of British Council officers, and showed her awareness of their difficulties: for outside Europe or America "wives are accustomed to the difficulty that they cannot place their guests until after the hour for arrival; because so many of those invited will not turn up". The less, I love 'em and they do great good - for our country - the official mean. I don't know much about the "wives" of other sex.

It is a pity that the selfish, short-sighted universities (my retired opinion) have never worked out systematic schemes of mutual exchange and secondment with the council and the BBC. Each to their own and they pick us off separately - or will privatize us to any cheap bidder.

In the final part of our series Boris Ford reassesses Leavis's famous book

## The great English tradition revalued



F. R. Leavis: classic essays

*The Great Tradition* has remained firmly lodged in my mind ever since F. R. Leavis's major book. Published in 1948, it is his account of the English novel and of the tradition of the greatest novelists. The title of the book has not only been remembered as quintessential Leavis, it has apparently been absorbed into the language. It is no doubt praise of a sort that Leavis wouldn't have appreciated to remark that one meets the Great Tradition constantly in weekend reviews.

Who, then, make up the Great Tradition of the English novel, in Leavis's judgment? And what is the nature of the tradition that links them? The book appeared with the title page: "THE GREAT TRADITION, George Eliot · Henry James · Joseph Conrad". But can those three writers, two of them foreign, really make up *The Great Tradition*, even in the eyes of so severe and exclusive a critic as Leavis is supposed to be?

This first chapter, written in Leavis's most assured and witty style, immediately adds a fourth name to the three: Jane Austen. And by the end of the chapter, having noted *en route* that "Critics have found me narrow", Leavis has added a fifth:

What I think and judge I have stated as responsibly and clearly as I can. Jane Austen, George Eliot, Henry James, Conrad, and D. H. Lawrence: the great tradition of the English novel is there.

If it be asked why, then, did the book not include chapters on Jane Austen and Lawrence, the answer is quite simply, that the book was written as a collection of existing essays and Leavis's essays on Lawrence had not yet been written. (The first of his two books on Lawrence appeared in 1955.)

As for Jane Austen, Leavis never wrote an essay on her; in his opening page he says only that "Since Jane Austen, for special reasons, needs to be studied at considerable length", he has not included studies of her novels. The real reason, I am sure, was that his wife, Q. D. Leavis, was working and writing on Jane Austen, and Leavis was far too courteous and had too profound an admiration for his wife's criticism to go into print on her chosen themes. The more's the pity, for his few pages on Jane Austen are full of point and suggestion.

At any rate, if Leavis was right in believing that

in the field of fiction some challenging discriminations are very much called for; the field is so large and offers such insidious temptations to complacent confusions of judgment and to critical indecision; then he was surely right to insist that the Great Tradition begins with Jane Austen. Before her, of course, there were Fielding and Richardson, whose *Clarissa* is a really impressive work.

But the importance of Richardson for us today, Leavis suggests, is that he was "a major fact in the background of Jane Austen".

And Leavis goes on to underline the way in which Austen "exemplifies beautifully the relations of the individual talent to tradition". She not only makes tradition for those coming after. Her work, like the work of all great creative writers, gives a meaning to the past. When Leavis moves on to the second novelist in his Great Tradition, to George Eliot, he claims that "Positively there is a continuity from Jane Austen". It is not for nothing that George Eliot admired her work profoundly, and wrote one of the earliest appreciations of it.

George Eliot's debt to Jane Austen can be seen most clearly in her irony and, Leavis says, in their common sense that "irony has a serious background, and is no mere display of 'civilization'". In the case of Henry James, who also greatly admired Jane Austen, he was undoubtedly influenced by her in his exploration of the meaning of "civilization". In reading him we have "a sense that important choices are in question and that our finest discrimination is being challenged". But James owed a debt to George Eliot, and more direct debt to George Eliot, and one of Leavis's undoubted triumphs in *The Great Tradition* is his demonstration that James's *The Portrait of a Lady* is an explicit "variation" of the Owendaleth Harlequin of George Eliot's *Daniel Deronda*. Not that the two novels are identical, but that they are "allied".

inspiration", and he ends his essay with praise of an exceptional order: The final stress may fall on Dickens's command of word, phrase, rhythm and image; in ease and range there is surely no greater master of English except Shakespeare. This comes back to saying that Dickens is a great poet.

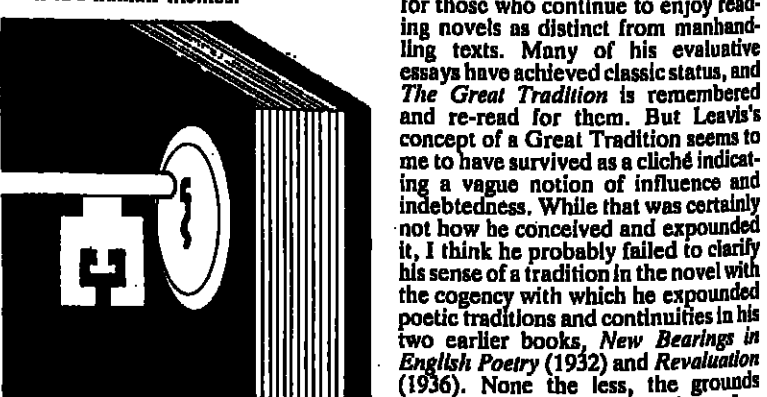
But would not a single achievement of this calibre justify including Dickens in the Great Tradition, the reader is bound to ask, especially as he is already recognized as a major influence on Conrad? Indeed, is *Hard Times* and *Son of a Bishop* House? or *Little Dorrit* or *Great Expectations*? Are these novels not also "moral fables", the mature product of "the rich complexity of Dickens's art"?

If the question is a rhetorical one, it is convincingly answered by Leavis and his wife when in 1970 they published their most distinguished book *Dickens the Novelist*. In this book Leavis admits that his essay on *Hard Times* was included in *The Great Tradition* at his wife's insistence: Q. D. Leavis had her own mind on the traditions of the English novel: see her comprehensive essay "The Englishness of the English Novel" in *The University Quarterly* (Spring 1981), written not long before she died. Moreover its inclusion "was meant as an avowal at any rate of default in respect of Dickens and of a deferred commitment to making the default good". (In another context, writing about Lawrence, he admits to having "once more to convict myself of stupidity and habit-blindness, on later re-reading.")

Leavis has often been derided for his inconsistency about Dickens. That is to belittle the man. When he came to re-read *Dombey and Son*, after what he confesses was "a very long abstention", he writes in the later book the "One cannot, then, rest happily on the formula that Dickens's genius was that of a great entertainer: the account is not unequivocal enough." He ends this chapter with an unrestrained tribute to Dickens's unique contribution to the English novel:

If we are to say that he saw himself as a popular entertainer, it must not be with any suggestion that he did not think of himself, and with justice, as having *quite* artistic aims. His insight into contemporary civilization, its ethos, its realities and its drives.

Leavis's chapters and books on the individual authors of his Great Tradition, on Dickens, George Eliot, James, Conrad and Lawrence, remain to this day marvellous examples of his capacity to read a novel with great sympathy and penetration - at any rate for those who continue to enjoy reading novels as distinct from manhandling texts. Many of his evaluative essays have achieved classic status, and *The Great Tradition* is remembered and re-read for them. But Leavis's concept of a Great Tradition seems to me to have survived as a cliché indicating a vague notion of influence and indebtedness. While that was certainly not how he conceived and expounded it, I think he probably failed to clarify his sense of a tradition in the novel with the cogency with which he expounded poetic traditions and continuities in his two earlier books, *New Bearings in English Poetry* (1932) and *Revaluation* (1936). None the less, the grounds Leavis gives for finding these few novelists exceptional reveal the unusual seriousness with which he approached the novel. These novelists share, in his judgment, certain qualities and preoccupations to a degree that sets them apart (or above).



On the other hand, it is disconcerting that Leavis goes on to say that the novelist to whom Conrad is most indebted is Dickens, who "may have encouraged the development in Conrad's art of that extraordinary energy of vision and registration in which they are akin". If that is cogently said, it inevitably raises the major question why Leavis did not include Dickens in his line of great novelists. This question has been much discussed. In his first chapter Leavis writes:

That Dickens was a great genius and is permanently among the classics is certain. But the genius was that of a great entertainer, and he had for the most part no profounder responsibility as a creative artist than this description suggests. In calling them "poet-novelists" I intend to convey that the determining and controlling interests in their art-engage what is "deepest in them" (that being men and women of exceptional capacity for experience), and appeal to what is deepest in us.

If that kind of language has become unfashionable in Booker circles and among the technocrats of literature, that is all too evidently their loss. In his own day, and no less in ours, Leavis's words, "for life and growth, and all this mass of destruction and disintegration".

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## Tracing the sources of new-write

Plagiarism has been a favourite sport since books began. Today it still provides dramatic moments when an alert and diligent scholar explores the dimmer recesses of a library and discovers that a thesis has been copied in its entirety from an earlier published work. Krutskie plagiarists even use sources in another language, with consequently lesser risks of discovery. One suspects that in this crime as in others, only a minority are ever detected.

Discovery so often depends on coincidence - a recent reading of the original: a chance search for verification of a statement; or even, of course, a reader finding his or her own familiar words leaping from another's page. But plagiarism today seems to be developing in a flexible new form, not merely in commercial essays but in many institutions, but much more cunningly in current essay-writing.

Essays traditionally are in the writer's own words. But many students write their essays with a helpful book or books or open beside them. Some selected short passages are appropriately added to the essay, within quotation marks, duly parenthesized. But round these quotations the student produces a collage, using without acknowledgement phrases, lines or complete sentences from the chosen author, linking them together by phrases and sentences of the student's own, possibly changing a tense here and there, missing out some of the author's less (or more) essential words, occasionally mixing in something from another author.

The result is the following kind of writing ("borrowings" are in italics): In normal circumstances the passage would appear as being all in the student's own words: "The post-primary sector was ill-prepared for the changes in organization and administration as it had operated for a long period without any very well-developed philosophy of its own. The new intakes of children were younger than their predecessors of a few years earlier. Problems occurred in wider ranges of abilities, aptitudes and socio-economic background but were not anticipated with appropriate action. There appeared to be an absence of liaison between primary and post-primary authorities in matters arising out of the development. There was a fundamental mismatch between the curricula, teaching methods and examinations."

This example shows a fairly even mixture of student words and borrowed words. Other instances offer larger proportions of the latter. A short paragraph like this may seem relatively innocuous - though undesirable - but when paragraph after paragraph is constructed in this way, the question arises as to how much of the essay the student is in fact writing. More importantly, to what extent does a student writing in this way really understand the subject? Is the substance of what is copied assimilated? Is it available for future - independent - use?

One student with whom this matter was discussed - her work had not been analysed for such traces but obviously she felt that it would show them - suggested that students feel it would not be possible to express ideas as well as the original writer has done. Or what is found relevant in the book seems too long - in student judgment - for orthodox quotation purposes, so particularly effective phrases or sentences are taken over. The student's own wording is modestly judged likely to be less effective. (One must admit, of course, that

some phrases linger in memory; but if one writes while referring to an open book the book's words have, even for experts, a hypnotic effect: it takes a conscious effort not to use them or something very like them. So new-write develops.)

Essay-writing has been increasingly required of students in various disciplines as the popularity of unseen examinations has waned and "continuous assessment" has taken over. Students are increasingly confronted by the need to produce 2,000, 3,000, 5,000, 6,000, 10,000 or 12,000 words in dissertations, "long essays", projects. With this amount of pressure, perhaps it is a bit much to expect that - except where quotation marks are used - all the words are the student's own. In fact, the reader of these "essays" is unlikely, unless in special circumstances, to discover how extensive borrowing has been. There are not likely to be abrupt and revealing changes in style. The final collages read well, indeed the reader may be favourably impressed by the neat turns of phrase here and there - unless of course the same neat wording recurs in a number of essays. Much depends on the reader's verbal memory.

Yet new-write can be easy to trace since page references of acknowledged quotations often indicate the pages from which more extensive and unacknowledged borrowing has been made. It is possibly a sign of the innocence of mind with which some students use this style that they give clues so glibly. Sometimes, even, a page reference is offered at the end of a paragraph which has been "reconstructed". The reader accustomed to traditional styles of writing assumes that this denotes what source has been used for data, or, possibly, paraphrased: not that this

is a veiled indication of copying. What is especially worrying is that new-write occurs in various institutions and not only among undergraduates but among postgraduate students, including school teachers. When the matter is brought to their attention, teachers agree that one should not write like this: but - it seems - they agree with some hesitation and reluctance. It is tempting to suggest that new-write has been fostered by misinterpretations of the project method in schools where hapless children are told to find out about some place or topic, do so by consulting reference works, copy the appropriate material or bits of it and receive praise - without any advice on the proper use of quotation marks. Possibly indeed we should accept

Alan Wilson asks how we can improve upon the existing forms and systems of planning

## Solving the problems

Everyone is potentially interested in planning. Any solution to a complicated problem, which takes time to implement, can be described as a plan; any statement of objectives and a study of means of achieving them is planning. Most organizations plan, either for themselves or for their clients; public sector and private sector. Environmental change, for better or worse, seen from home, car or office window, happens because of, or in spite of, town and country planning.

At the end of the war, there was an obvious need to rebuild in all sorts of ways. This, coupled with sustained economic growth, created the first phase of planning of the modern era which lasted until 1973, peaking in the optimism of the mid-1960s. The notion of planning as a professional activity was captured by town planners, aided by civil engineers - the latter particularly in the context of transport planning. This was also a period when many organizations grew rapidly in size and were forced to take planning seriously. Thus was born corporate planning and, particularly in the public sector, systems such as PPBS (planning, programming, budgeting system). These developments were reinforced from another direction: the availability of powerful computers to help manipulate planning data.

These concerns were reflected both directly and indirectly in academic organizations. Departments of town planning mushroomed - there are now eight in universities and more in polytechnics; departments of management studies and business schools flourished in both sectors of higher education. On a lesser scale, some departments of social policy and administration were established. More directly, the social science departments, particularly economics, geography and sociology provided some of the intellectual underpinning; mathematics and computer science departments provided technical expertise. In some cases, planning problems are "solved" on the computer to produce a best plan - and in some cases, this was seen as the ultimate goal.

From the peak of optimism in the mid-1960s to the early 1970s, doubts began to creep in. Estimates of high-rise flats did not seem to deliver what had been promised. Motorway protest groups became better organized. Schools began to develop in the social sciences which were critical rather than

supportive of planning. In 1973, the OPEC oil price rises and the subsequent recession and public expenditure cuts precipitated a transformation into the second phase. Town planners and highway engineers were relatively little to do because the cash had run out for building. Public sector planning suddenly seemed much more difficult when it was concerned with cuts rather than the allocation of the guaranteed annual budget growth. The social science critique intensified: it was argued that planners were responding inadequately to trends which were the products of deeper structures - attack symptoms rather than causes. Computer-based methods were seen as simplistic and too rigid. This was accompanied by a conservative political response: planning was less fashionable; there was a trend to smaller organizational units which could be run by day-to-day management.

This was all reflected in academic organization. It was no longer difficult to get into town planning departments and indeed the University Grants Committee and the National Advisory Body are now negotiating to see if it is possible to close some: far more professional planners are being produced than there are jobs. Operational research is seen as something of a search for exception in those sectors of industry for which optimization remained relevant: all is still well for the Shell manager responsible for scheduling oil tankers, but in the more complex world of (say) local government, initial hopes were not fulfilled.

There has been a decade of near-despair and confusion among many planners of all kinds, but I believe we are now within sight of a turning point and a more progressive third phase for planning. My own recent conversion to planning was initiated from an unlikely source - Norman Fowler's Department of Health and Social Security - but I would guess that many others have had similar experiences and that the case can now be made that a new trend is under way. This will be characterized, I would argue, by the adjectives "realistic" and "intelligent". In a way I will try to explain. As a preliminary, though, it is useful to stand back and ask: what of the first two lessons to be learned from the first two

phases. There are three main headings for this assessment. First, we know much more about the nature of planning and the different kinds of activities which constitute it. Second, we know more about the nature of change in the systems being planned, and this has implications for our attitude to uncertainties and the extent to which they make planning more or less worthwhile. Third, we have to acknowledge the failure of Phase 1 and Phase 2 and to build future methods on our understanding of this.

It has been argued that there are three main kinds of planning activity: policy, design and analysis - sometimes described more dramatically as choice, invention and prediction. The distinctions are important. Policy involves the setting of objectives, but also the coupling of professional planning to the political process. Analysis involves the study of problems in the system to be planned and the prediction of the consequences of adopting a plan. It also involves the assessment of the effects of uncertainties. Design is often conceived as the invention of what can be argued to be the best plan. In town planning, for example, this attitude is a product of its historical association with architecture. But it can be seen more usefully as the generation of a range of alternative plans, each of which can be analyzed in relation to objectives. In many situations, there will be a variety of realistic options, and in different towns or regions for instance, it is important to allow full run to this.

One of the dangers of the narrow professionalism of any field of planning is that fashion can dominate. A type of plan is widely taken up as "best", and this can easily lead to widespread planning disasters - high-rise flats being an obvious example. This danger is also coupled to another arising from a distinction made by Christopher Alexander on the trans-technological age: from unselfconscious planning, where modifications proceed incrementally in a testing evolutionary process to self-conscious planning where any "mistake" is likely to be transplanted elsewhere, on the scale of fashion, on a substantial scale.

About this essay... I think society is important because lots of people are in society. The mode of production of material life determines the general character of the social, political and spiritual processes of life. It's not the consciousness of men...



Is a veiled indication of copying.

What is especially worrying is that new-write occurs in various institutions and not only among undergraduates but among postgraduate students, including school teachers. When the matter is brought to their attention, teachers agree that one should not write like this: but - it seems - they agree with some hesitation and reluctance. It is tempting to suggest that new-write has been fostered by misinterpretations of the project method in schools where hapless children are told to find out about some place or topic, do so by consulting reference works, copy the appropriate material or bits of it and receive praise - without any advice on the proper use of quotation marks. Possibly indeed we should accept

this as the style of the future? With further refinement of word-processors to provide "books" on floppy discs, to collate sources, and restructure sentences, essayists could simply edit and produce a modified print-out. The labour of copying could be spared.

Montaigne likened pedants to birds who collect seeds not for their own nourishment but merely to transfer them to the young or scatter them again. Our students are scarcely pedants: but seem to be developing a similar technique. Should we do something about new-write?

Margaret Sutherland

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which planning is relevant; those offering some appropriate technical expertise; and those with no apparent connexion with planning at all. In the first category will be found town planning departments and probably nothing else. In the second, the economics and social science departments with the possibility of specialist departments, ranging from public to private sectors, covering such fields as health, transport or textiles for example. And the management studies departments and business schools. Third, there are, say, mathematics and computer science departments; perhaps subsections within engineering departments. The fourth category contains everything else, but each of these is likely to have at least a peripheral interest in planning - either because their graduates will often go into management and planning jobs in industry or because they provide, to take a different example, teachers or doctors who will work in sectors which will be planned.

Given this complexity and range of departmental objectives, there is no way in which a reorganization can be suggested which would provide more focus for planning studies through the departmental structure. Each of the departments mentioned has a prime focus which is not planning-orientated. A new planning studies department would, in the face of present competition for resources, be too small to be effective. There is, however, an obvious answer: a multidisciplinary centre for planning studies with a small core staff together with a substantial associate staff, each of the latter released from their parent department for, say 25 to 50 per cent of their time.

This would form a powerful unit: planning experience in different fields would be shared over coffee; research funds would be attracted; postgraduate inter-disciplinary courses could be taught; short (or long) courses could be offered as options for undergraduates in other departments. Such a centre would, indirectly, create pressure on other departments to contribute to a pool of expertise, particularly in fields like computing. Without this kind of structure, progress will be made and a new style of planning will emerge, but more slowly and perhaps with most of the expertise outside higher education.

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## BOOKS

## A meeting of minds

by Dennis H. Wrong

*The Constitution of Society: outline of the theory of structuration*  
by Anthony Giddens  
Polity Press, £19.50  
ISBN 0 7456 0006 9

Anthony Giddens's new book is the fullest presentation yet of his theoretical views. Longer than any of his previous books (with the exception of his first 1977 collection of essays), it is organized around his own central concepts and terminology, relegating discussions of the works of others to a section entitled "critical notes" at the end of each chapter.

This volume should forever lay the ghost of the frequent charges that Giddens is primarily an exegete of the writings of others and that he is excessively "eclectic" (as if that were such a dreadful thing to be). Both charges have long seemed to me to be misdirected. To be sure, Giddens's first book *Capitalism and Modern Social Theory* (1971), was largely pure, and extraordinarily accurate, exegesis of Marx, Durkheim and Weber, as were his short books on the two last-named thinkers and many of the essays in his two collections. But all of his other books have been critical encounters with major intellectual traditions in which he developed his own distinctive, and often highly original, views on central issues in social theory: on realism as opposed to nominalist conceptions of social class, the antinomies of individualism and voluntarism/determinism in social thought, the epistemology of the "double hermeneutic" in social science, the deficiencies of holistic and evolutionary thinking in both functionalism and Marxism.

Many of these themes inevitably recur, and indeed are central to, *The Constitution of Society*. I continue to sense that Giddens's thought, full of cross-reference to his earlier writings and to unpublished work in progress, advances like a snowball adding to its breadth and volume as it moves forward absorbing new material in its path. The present book, for example, convincingly integrates human geography into Giddens's scheme of things.

He also goes further than before in substantially incorporating elements of psychoanalysis into his conception of human agency—not yet far enough for my taste, but his attempt to recover some of the insights of the neo-Freudians and the Freudian-influenced cultural anthropologists of the 1930s and 1940s is a step in the right direction towards correcting the excessive cognitivism of recent social theorizing.

It is because Giddens's thought advances through encounters with other bodies of thought that I remain merely inclined rather than fully disposed to regard this book as definitive. His own concepts and attempted resolutions of perennial problems are here accorded full silence and priority, but he is still barely middle-aged and his exceptional productivity is unlikely to cease. All thinkers develop their ideas in debate and confrontation with others. It seems to me that Tony Giddens has simply been more honest in allowing full visibility to the critical-polemical orientation of his thought instead of engaging in a monumental system-building exercise in the German or French—and often American, too—manner.

Giddens remarks in his introduction that the entire book is in a sense an "extended reflection" on Marx's famous statement that "men make history, but not in circumstances of their own choosing." Giddens sees this as posing the problem of the interdependence of "agency" and "structure." He upholds, ultimately, the primacy of agency, drawing on the highly developed conceptions of human action and consciousness in post-Wittgensteinian British philosophy, continental hermeneutic phenomenology, and, to a lesser extent, French linguistic structuralism. He is strongly critical of "objectivist" theories asserting the dominance of "structural constraint" over human action, whether in the structuralist Marxist versions that have recently been influential in Britain or in the Durkheimian versions, often obsessed with establishing the disciplinary autonomy of sociology, that have prevailed in the United States. But Giddens also repudiates the opposite "subjectivist" view that tends to extremes of voluntarism and idealism (in several senses of the

term). He claims in the introduction to have avoided succumbing to the attractions of either structural sociology or methodological individualism. Yet the major strength of the book, in my view, is its successful argument for methodological individualism as the indispensable ground of serious and thoroughgoing social analysis. True, Giddens quite properly rejects the questionable epistemological claims often associated with this position but he affirms the crucial insistence of methodological individualists that "social forces" are always nothing more and nothing less than mixes of intended or unintended consequences of action undertaken in specifiable contexts.

The modesty of Giddens's claims for social theory is immensely refreshing. He does not contend that acceptance of his propositions will lead to some sort of breakthrough in sociological analysis, nor that they provide a rational basis for moral or political judgment. His main concern is with getting it right for its own sake even if doing so hopelessly blurs disciplinary boundaries or in the end describes what social analysts usually do—Weber's declared aim in his methodological writings—rather than laying down prescriptions for them. American sociology was for a long time staunchly committed to a natural science model, to derogation of "mere" particulars and the common sense or "knowledgeability" of the social actors themselves, as well as to abstract functionalist representations of the social order. Giddens is unapologetically critical of all of these, but his distinction between the "practical" and the "discursive" consciousness of social actors also applies to intellectual practice. American sociology has existed for nearly a century in many diverse forms. I think that my powerful sense of the truth of many of Giddens's formulations derives from long direct acquaintance with the substantive work of American sociologists—and cultural anthropologists—as much as from the cogency and logical rigour of his formal arguments. Their practice has often been superior to their "official" theoretical and methodological proclamations.

There is much else in this book that I regret I can comment on only briefly. Giddens's conception of "time-space



Anthony Giddens

distanciation" as fundamental to human society and crucially implicated in the changes it has undergone under modern conditions is immensely fruitful. I like his dismissal of the alleged "micro-macro" gap, fast becoming a tiresome standard issue debated at conclave of sociological theorists, as essentially involving the difference between social and system integration. I am delighted to find him acknowledging the theoretical subtlety and importance of work of my old Canadian classmate Irving Goffman, so often treated as no more than a sharp-eyed social observer. Giddens's recognition of the superiority of Goffman's theoretical insight to that of Michel Foucault, whom I have always admired as the French Goffman, is especially gratifying.

On a more critical note, I agree that the concept of "power" is crucial to the understanding of how society is produced and reproduced, but Giddens defines it so badly that it is virtually indistinguishable from agency itself and therefore seems redundant. I prefer his definition in an earlier paper which he now says he finds too restricted. I think there are too many Marxist residues in his characterization of modern industrial society as

"class society" in contrast to the "class-divided" type prevailing in pre-modern agrarian civilization. Most of what Giddens attributes to the modern type would hold true of any societies with economies based on money, markets and a complex division of labour whether or not they also included private ownership of capital and "commodity production." Giddens's critique of all forms of evolutionary thinking in the social sciences is thoroughly sound, although it amounts pretty much to what I was taught in my youth by functionalist and culturally relativist anthropologists.

I hope I have managed to suggest the richness of this book. Giddens says it was hard to write. To have covered so much so economically, avoiding excessive digressions and needless elaboration of concepts, must indeed have imposed a strain upon him. But despite its ambitious reach, *The Constitution of Society* has the lean, spare, utterly serious, craftsmanlike qualities we have learned to expect from its author, which, make it, in contrast to so many treatises in social theory, a real pleasure to read.

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joined together in certain relations, each subject to the laws of individual human nature.

On balance this is a provocative and stimulating guide to the early history of the social sciences, although its corrections of past errors and applause for valiant tries cannot but mislead readers who turn to it only for an exposition of what its cast of aspiring social scientists said and meant. Sometimes Brown's criticism traps both author and reader in parenthetical asides, as when he speculates on how Comte might have replied, albeit in a way which could not have proved satisfactory, to an objection later made by F. A. Hayek.

More often, and unfortunately, it threatens the historical reliability of his claims—especially when he comments on thinkers, such as Montesquieu and Herder, whose profoundest contributions to the human sciences were not built round any commitment to natural laws on the model of Cartesian or Newtonian mechanics, or about Vico, now chiefly remembered, as Brown allows, precisely for opposing such views. Montesquieu in particular receives unmerited short shrift here, merely because of a wayward definition of natural law which Brown judges primitive, while ignoring most of the sophisticated and immensely influential social philosophy he bequeathed to us. The peculiar genius of Machiavelli, too, lies outside the author's main range of focus, and it is odd to find Machiavelli's name emblazoned in the subtitle, since his ideas come under only fleeting scrutiny in the text.

The central difficulty of Brown's work, however, is that it belabours a too sharply circumscribed account of Enlightenment social science around the proposition that there must be, beneath the surface of social phenomena, a scientific law of society fashioned in the image of newly discovered laws of natural science. On the one hand, this

concentration leaves many of Brown's leading players silent about most of their main ideas, just occasionally darting across his stage with passing shots hurled from the wings on demand. On the other hand, it seems to have discouraged him from looking further afield for other sorts of evidence which might have lent additional weight to his case.

What is at issue here depends as much upon the professionalization of scientific communities in Europe during this period, and upon the self-image of their members, as on disparate writers' claims about the laws of social life. As well as looking more closely at the new meanings of natural law invented in the 1600s with the inception of the Royal Society, Brown ought to have investigated some of the earliest uses of the term "social science" during the 1790s, when revolutionary *idéologues* were preparing a new classification of knowledge for a revitalized system of education in France. The fact that alternative hermeneutic conceptions of the study of man survived or arose afresh in the same period, above all in Italy and Germany, also suggests a certain cultural disaffection, around the Enlightenment's margins, with a prevalent, largely French and British, Empire of Reason.

This book provides a subtle and trenchant contribution to our knowledge of the early methodology of the social sciences, but its generally astute deflation of extravagant claims about the subject occasionally succeeds as well in undermining some of its own foundations as a work of history.

Robert Wokler

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## BOOKS

## The price of coal

*Economic Development of the British Coal Industry 1800-1914*  
by B. R. Mitchell  
Cambridge University Press, £30.00  
ISBN 0 521 26501 0

When in 1915 the distinguished economist H. Stanley Jevons turned to the British coal trade he found it "a great industry by which . . . five millions of people are supported" and he modestly wondered how "such a mighty organization of human energy [might] be described and explained in one small book". His answer was to write some 876 pages.

Many studies have since appeared, though as Dr Mitchell notes in the preface to his own book most have dealt either with periods other than the nineteenth century or with social and trade union issues rather than offering a systematic economic analysis. One exception is Buxton's admirable recent survey which included a perceptive section on the period 1800-1914. Presumably we shall also soon have volume three of the Oxford history of the British coal industry, sponsored by the National Coal Board, which will

cover roughly the same time-span as Dr Mitchell's present study.

The broad saga of the industry is not in question. Between 1800 and 1914 coal responded to the fuel demands of an expanding economy and the heating requirements of a rising population. It also furnished for export and ships' bunker trade—one of the few market areas to which the author might have devoted more space. Output increased by some 2,500 per cent (from around 13 million tons per annum in 1800 to the all-time pinnacle of 287.4 million tons in 1913) while the direct labour force advanced from a conjectured 70,000 to over 1.1 million workmen in 1914. Fixed capital (at 1886 prices) is estimated to have risen over the same period from about £4.5 million to £124 million. Growth rates naturally varied over the various coalfields and with the movements of the trade cycle, though they generally peaked around the 1850s and were at their most sluggish in the 1880s.

Dr Mitchell subjects each aspect of this story to detailed scrutiny, using with clarity and discernment whatever statistical series are available (for example, the figures from HM Inspectors of Mines' reports, official lists of mines, the copious data from royal commissions, and so on). Thus chapters are accorded to markets, capital, technology, labour, profits, productivity, and so on. The author makes no claim to be a devotee of neoclassical production functions, but does, sensibly, see this structure as offering a manageable framework for methodical investigation.



"Plit girls" tipping at a Wigan colliery. This picture, like that above of a miner ramming a powder charge, is from Michael Pollard's book *The Hardest Work Under Heaven: the life and death of the British miner* (Hutchinson, £9.95).

## Family ties

*Kinship in the Past: an anthropology of European family life 1500-1900*  
by Andrzej Plakans  
Blackwell, £24.50  
ISBN 0 631 13066 7

The twin goals of this ambitiously titled book are apparently to forge closer links between social anthropology and history while furnishing a new basis for insights into kinship in the European past. The reader, however, is likely to come away confused as to just what Professor Plakans has achieved or indeed what it is that he has set out to do in this puzzling and in many ways unsatisfactory volume.

Confusion stems both from the basic conception of the work and from the manner in which the author has chosen to tackle the task he sets himself. Despite its title *Kinship in the Past* has virtually nothing to say on any substantial questions of European kinship, but is devoted instead to a discussion of some theoretical issues which confront attempts to reconstruct kinship systems from surviving records of European communities. We are promised two further studies employing the techniques outlined in the current volume, but in the absence of these it is

hard for the reader to assess Professor Plakans's ideas on the subject and this difficulty is compounded by the highly abstract way in which they are presented, with large sections of the text heavily laden with any empirical examples. This makes much of the text heavy going for the reader, who is given little indication of how the problems being discussed might manifest themselves in concrete instances or how successful the author's suggested solutions might prove to be in practice.

The book's starting point derives from the social anthropology of Meyer Fortes and consists of the postulation of a discrete, analytically distinct, "kinship domain" within human communities. This domain comprises a set of social norms and roles, which are founded on but cannot be simply identified with, the network of genealogical relationships within such communities. Plakans follows Fortes in asserting the irreducibility of such kinship relationships to other spheres of social and economic life. Subsequent chapters explore the difficulties which arise when historical records are used to investigate kinship conceived in this way. In the first place, the definition imposes a dual task on the historian, requiring not only an extensive process of record linkage and sifting, but also the isolation of distinct "kinship" elements from the mass of social and economic facts, by a process of elimination which, as the author acknowledges, risks the loss of important empirical evidence.

In some areas there are no great surprises, though Mitchell's painstaking interpretation of statistical data clarifies each question he tackles. His study confirms the way in which each major coalfield enjoyed a fair monopoly of its local markets and, despite the spread of railways, maintained its distinctive characteristics. Likewise, though the importance of the older landed coalmaster collapsed, capital inputs continued right up to 1914 to be almost entirely generated from within the industry and organized through the media of small partnerships or (eventually) limited liability companies which were in reality "people long connected with the industry as owners or managers". Technological development, although considerable, was with the exception of the thinner seams mainly a matter of improving the flow of coal from "face to bank" rather than an application of machinery at the coalface itself.

Mitchell analyses the dilemmas of introducing coal cutting machines searchingly but sympathetically. He shows that the failure to cut more coal mechanically was less a consequence of entrepreneurial inadequacy than of relative costs. Except in seams under four feet thick, hewers' wages were seldom so high as to tempt naturally cautious owners to mechanize. The downward productivity of the industry from the 1880s must be attributed partly to the low degree of face mechanization, but with labour plentiful and usually cheap it is difficult to single out the entrepreneur for peculiar censure. "We are slow in making new departures", a Yorkshire owner



admitted to the Royal Commission of 1903-5, but generally the record of conservatism in, for example, installing electric winders is again understandable in terms of cost structure and the efficiency of existing steam investment.

The total factor productivity approach which the author tentatively explores suggests that efficiency was impaired by a qualitative decline in the resource base and some deceleration of demand growth by the end of the period. The industry remained prosperous up to 1914 because of the

rise in the price of coal, relative to costs. But, as all interwar historians know, difficulties loomed ahead.

Dr Mitchell has written a work which adds materially to our understanding of a great industry and one of which H. Stanley Jevons would have thoroughly approved.

B. F. Duckham

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## Incessant toil

*A Woman's Place: an oral history of working-class women 1890-1940*  
by Elizabeth Roberts  
Blackwell, £14.95  
ISBN 0 631 13572 3

Elizabeth Roberts's study is based on interviews with about 160 women, both men and women, in three northern towns during the 1970s. Her respondents were a representative sample of working people, and came from a wide variety of family sizes and occupations, with a good spread of wage levels and religious and political beliefs.

The three towns selected were different in their economies and histories: Barrow was a town of heavy industry, dominated by the firm of Vickers; Preston was a cotton town; and Lancaster was an old county town with one major industry, manufacturing oil-cloth and linoleum. Despite important local differences in such matters as diet, a common pattern of daily life emerges from the five main chapters on growing up, work and leisure, marriage, managing the home, and

families and neighbours. The result is a very fine piece of social history, important as a contribution to the history of the working class, and of women in general. It is eminently readable and packed with vivid first-hand evidence of working-class life before and after the First World War.

Working-class women, it seems, "knew their place" in the late nineteenth and early twentieth centuries, and that place was primarily the home and family. They exercised a key economic role in the management of the family budget, they looked after the feeding, clothing and socialization of the children, and established and upheld familial and neighbourhood mores. Women saw themselves as managers, men as the "providers". The majority of women interviewed did not feel that they or their mothers had been exploited by men (though a minority had experienced terrible mistreatment); and Elizabeth Roberts concludes that a patriarchal model of male oppression is not particularly helpful. Those women who were aware of the limited horizons and opportunities of their lives tended to blame their poverty and lack of education. Out of all the women studied only two were involved in the suffragette or suffragist movement; but 11 were active in the Labour Party.

As in similar studies one is left with a

feeling of amazement and sympathy by the incessant toil to which so many working-class women were committed, often with a double burden of housework and a wage-earning job outside the home. One of the commonest expressions heard in Preston was "It was bed and work all the time". The strong discipline of respectability and keeping up appearances, the devotion to the work ethic, and the religious background of childhood are all admirably brought out. So too is the fear and ignorance of sex.

There was almost total reticence on the part of parents in discussing sexual matters with children, and strict control of relationships between boys and girls. Dr Roberts provides some telling evidence of the ignorance of many young women about the facts of procreation and pregnancy. As one respondent put it, "We were as innocent as the grave". Sex outside marriage was unanimously condemned, though not all girls managed to "keep out of trouble". A girl in Barrow, recently arrived from rural Cumberland, found herself pregnant and had to get married. "Ah, Anna," remarked one of her relatives, "thou hast been tasting soup before it was ready". To which she replied, "yes, and I found a carrot in it".

One of the values of oral history and history from below is that it enables us to test the assumptions and hypotheses of general historians. A Woman's Place casts doubts on quite a few pieces of received wisdom. Thus Standish Meacham's assumption that the earnings of adolescents which contributed to the family income made parents feel dependent upon, or beholden to their children, is not borne out by oral evidence. Nor does H. J. Habakkuk's assertion that "industrialization made family size a matter of deliberate decision by promoting the application of rationality and calculation in place of custom and traditions" seem sound; for the working class of Preston, which had long been industrialized, displayed very few of these characteristics in the early years of the twentieth century. J. A. and Olive Banks argued that contraceptive advice and knowledge was diffused from the middle to the working classes; but no evidence for such a diffusion theory appears in Dr Roberts's sample. Michael Anderson's theory that relationships between kin were calculative and reciprocal finds little support from this evidence. Likewise Patricia Knight's recent view that abortion was the most prevalent form of contraception for working-class women and an accepted part of working-class life does not appear to be correct for the three Lancashire towns in the study. Clearly, *A Woman's Place* is a book to which all future historians of the working class will be indebted.

J.F.C. Harrison

Professor Harrison's book *The Common People* was published earlier this year.

John Landers

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## Look to nature

*The Nature of Social Laws: Machiavelli to Mill*  
by Robert Brown  
Cambridge University Press, £22.50  
ISBN 0 521 25782 4

Human nature has always shared with God at least one uplifting attraction and one abashing flaw: it is the grandest object of speculation but a rather poor subject for science. The revolutionary advance of the exact sciences in the seventeenth and eighteenth centuries prompted many thinkers to believe that we could acquire knowledge of our own nature with equal precision, and most of the human sciences which originated or else were drastically reformed in the Enlightenment—psychology, political economy, anthropology, and soon afterwards sociology—drew much of their inspiration from attempts to apply the methods of Galilean or Newtonian mechanics to the study of mankind itself.

That ill-judged point of departure has been the bane of the social sciences ever since. For empirical generalizations of our own behaviour bear scant resemblance to any causal laws of natural phenomena, and far too often the purported regularities of social science explain so much that nothing in particular stems from them, or so little that most specific instances fail to conform. While our frontiers of knowledge of the worlds outside and within seem to be pushed back every day, the structural laws of the world we have made remain as darkly mysterious as they were before the Enlight-

enment, and generations of social scientists must share the blame for the unfortunate conviction of their paymasters that they have largely failed in the task they set themselves.

Robert Brown's avowed aim in this study is both to rectify and to criticize the doctrine—which he takes to be the central tenet of Enlightenment and post-Enlightenment social science from Hobbes to John Stuart Mill—that the study of man must be modelled upon the study of Nature. Much of the material he covers is drawn from other authorities—Leon Pompa on Vico, for instance, or Duncan Forbes on Hume, and Ronald Meek on Turgot—to pertinent acknowledgements his advances is his own, and he develops it with great gusto and keen perception in proffering as successful an introduction to the methodology of the social sciences in this period as students will find in any book of such concise style and length.

Perhaps its chief merit is its portrayal of how self-conscious were the pioneers of social science in their reflections on the nature and status of the laws for which they probed. Marxist and other followers of the subject would no doubt be rightly vexed to learn that nothing substantial has been added to the Enlightenment conception of the social sciences since Mill, but it is at least invigorating to read that about such matters there were pertinent thoughts before Karl Popper's. The very idea of natural laws of human behaviour independent of human will, we are reminded—just that conception of constant regularities in whose image many of the social sciences were later shaped—was an invention of some mid-seventeenth-century founders or early members of the Royal Society, and it differed sharply from classical and theological beliefs, according to which natural laws were

precepts of reason ordaining right conduct. Hobbes, in his role here as the most prominent of early modern thinkers who sought to make the study of civil society an exact science, did not employ the term "natural law" in the sense first used by scientists of the next generation.

Brown threads a neat path through the nascent methodologies of specific social sciences as well, most notably, perhaps, that of political economy. From James Harrington's claim that our types of government reflect distributions of property he traces George Turnbull's wider conception of the "natural causes of empire" and shows how, in a distinct but related context, François Quesnay formed his account of the circulation of money through economic classes as an illustration of a natural law which bound a moral rule to a particular physical state of order. Almost the whole of Turgot's contribution to economics, moreover, from his law of diminishing returns in agriculture to his theory of our stages of development and progress, receives lavish praise from Brown for its significance—a tribute all the more conspicuous in a work so generally critical of the pretensions of social science.

Other chapters deal incisively with Mandeville's and Smith's perspectives on the unintended consequences of our social life, culminating in Ferguson's splendid remark, drawn from Cardinal de Retz and anticipating Marx, about the reality of human action not being the execution of human design. For the nineteenth century, Brown's most persuasive treatment of the subject can be found in his recapitulation of the differences, which denied scientific status to descriptions of unobservable "internal facts", and Mill's reductionism, according to which social phenomena are nothing but the actions of persons



# BOOKS

## Plenty of gusto

Leslie Stephen: the godless Victorian  
by Noel Annan  
Weidenfeld & Nicolson, £16.50  
ISBN 0 297 78369 6

Noel Annan's *Leslie Stephen*, then subtitled "his thought and character in relation to his times", was published in 1951 and has long been out of print. This new version (which is much too substantially changed to be called a new edition) is subtitled "the godless Victorian". The change is significant, not so much for what it says as the way it says it: it is part of a strong, authoritative, definitive note that informs this book, and part of a confidence that is both amplifying and clarifying.

In the preface, for instance, Stephen is now "the dominant in Victorian tonality"; in 1951 it was suggested that "in him we can hear the dominant of the Victorian tonality". Then we could hear if we listened: now he is the dominant, the godless Victorian, the representative man of letters whose best work expressed one side of a difficult and unsettled personality. Mr Ramsay in *To the Lighthouse*, groaning and muttering, is a portrait of one aspect of his impetuous and wilful self; the other is the man of letters, who could easily "turn a judicious, readable review", and whose best side overflowed into his scholarly work such as the *Dictionary of National Biography* and *The History of English Thought in the Nineteenth Century*. There, as Annan remarks, "page after page is enlivened by Stephen's gusto, his delight in metaphor, his humour, indeed his sense of fun, and the scholar's delight in exploring byways while never losing sight of his main argument."

This felicitous description might serve for the present book too. The figure of speech already quoted, comparing Stephen to a dominant, is typical of a delight in metaphor, and the other pleasures abound: there is plenty of gusto, humour in language and anecdote, and a delight in curious byways, such as the observation that Jem Belcher gets into the *DNB* supplement but Tom Faulkner does not. In all this, Stephen himself seems to have been Noel Annan's model: if there is a further influence it is clearly that of Samuel Johnson, and one of the pleasures of this book is the language. Dr Gekker, the Master of Trinity Hall in Stephen's time, there, is "an ancient megatherium". Henry Fawcett, Stephen's friend, "gloried in using the felicific calculus like a sickle"; and Stephen himself "could be memorably silent... the cheerless obtuseness which would descend about him was an omen of a sudden exit". Set beside this are the anecdotes, such as Fawcett's intention of reading the works of Socrates, and the jokey figures of

speech: "James (William James) gave a turn of the screw to the controversy about belief"; "The *English Historical Review*, born in 1868, passed its infancy fast asleep."

Many of these *mois justes* date from 1951, and it is a pleasure to rediscover them here: the changes seem mostly for the better, though I am sorry that Anny Thackeray's face is now round and plain and not "round, plain and bonny", and it is a sign of the times that we now have to be told that it is Browning's Grammarian who settled Hoot's business. Otherwise much is improved in the biographical section. The events are the same but they are told more dramatically, with more sense of impending arrival and consequent feeling.

The most substantial rewriting, however, occurs in the sections which describe Stephen's intellectual life among the currents of Victorian faith and doubt. He became a rationalist, oddly enough, by way of Evangelicalism and the Clapham Sect, believing that the Protestant reliance on individual judgment led naturally to rationalism. This was strengthened by Cambridge pragmatism (compared entertainingly here with the Oxford mind) but now Cambridge rationalism is placed in the wider context of nineteenth-century thought, especially German transcendentalism. Agnosticism, too, is seen as having its roots in Stephen's beloved eighteenth century. The patterns of thought, therefore, are much more complex than they were in 1951: then the movement was a

straight progress from belief to agnosticism and thence to morality in society and in the individual; now the secularization of society is seen against a wider background of European thought and historical movements.

Stephen had his limitations, and Noel Annan freely admits them. He was an odd, unsocial man, and a fearsome father. His literary criticism, too, has its prolixities: "the intelligent, sensible paragraphs trot on, like the second subject of the finale of Schubert's Great C Major". But he was also a man of ardent temperament, following the light of truth as he saw it, free from cant. Among the good qualities he valued especially manliness, despising Coventry Patmore as effeminate and describing George Herbert as "skulking behind the Thirty-Nine Articles instead of looking facts in the face". At a funeral Stephen preferred the Psalmist who "takes his sorrow like a man" to St Paul who "is desperately trying to shirk the inevitable".

Stephen often made a mess of things, especially family life; but it is here that Noel Annan's greatest quality as a biographer, moralist, and man of letters, comes through. "Men and women are to be pitied", he writes, describing Stephen's clumsiness in personal relationships with those close to him: "and we ourselves too".

J.R. Watson

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Leslie Stephen, a photograph by G. C. Beresford, 1902.

## Madness and genius

August Strindberg  
by Olof Lagercrantz  
translated by Anselm Hollo  
Faber, £20.00  
ISBN 0 571 11812 7

The proximity of genius to insanity is a cliché of artistic criticism; many writers and artists have been more than a little unbalanced, and some have completely lost their foothold in reality. August Strindberg was balancing on a knife-edge during several periods of his life, a fact to which his letters and diaries bear abundant witness. And yet in biographer Olof Lagercrantz suggests, precisely because of this - he produces a constant stream of innovative and finely-crafted works (the new collected edition of his writings which is in the process of being produced in Sweden is planned to run to some 75 volumes). He thrived on tension and disaster, and when it did not seek him out, he created his own, destroying his marriage, reviling his friends and alienating his publishers and his public with his unpredictable moods, his jealousies and his excesses.

Strindberg has found an enthusiastic and eloquent apologist in Lagercrantz, who traces the triumphs and vicissitudes of his subject's life with a

thorough knowledge of the documentary material and a nice eye for detail. The book will tell informed English readers nothing about Strindberg's theatre which they do not already know; but then that is not its aim. What it does provide is a relatively full account of the wide variety of Strindberg's writings, his novels, poems, journalism and polemics; and above all it portrays Strindberg in his Swedish setting, providing a historical and social context for those relatively few works which are well known abroad.

When Lagercrantz's book appeared in its original Swedish in 1979, its conclusions were questioned by several Swedish critics. Lagercrantz was taken to task for being too uncritical, for exaggerating the merit of some of Strindberg's deservedly lesser known works and for explaining away his instability as artistic licence. The inference, maintains Lagercrantz, was "a myth", largely invented by Strindberg as a spur to his literary inspiration - a claim which it is difficult to square with contemporary accounts of his hysterical, even manic, behaviour. The fact that Strindberg was a genius who used his life as raw material for his art seems to Lagercrantz to excuse extremes of callousness and cruelty: he gave away the first-born child of his marriage with Siri von Essen because it had been born inconveniently soon after their marriage (it died two days later); he later attacked Siri viciously in front of the children, hearing her with his fists (it happened only once, says Lagercrantz, as if that were extenuation). On another occasion we are

told: "The ruthlessness with which Strindberg treated Dagny Juel... arose out of a fear of something within himself that was threatened by her, and it is consequently difficult to take his vile behaviour towards her seriously." One wonders whether Dagny Juel did not take it seriously enough! "Genius" may explain, but it cannot excuse nastiness. Lagercrantz's sympathies are so wholeheartedly on the side of Strindberg that they lead him into making some distinctly odd statements.

Despite this imbalance, however, the biography does contain much useful material, and if read with circumspection can add greatly to our knowledge of Strindberg. It would have been still more useful with a fuller system of references; Lagercrantz has a habit of referring us to works like "Arne Melberg's penetrating study" *en passant*, with no indication anywhere of title or date, or even more irritatingly: "a man who became close to Strindberg a few years later once said of him...". Clarification, not mystification, is the task of the biographer.

The translation by Anselm Hollo is adequate rather than good; there are a few slips, and the light and easy flow of Lagercrantz's Swedish is rendered into a rather heavy and stilted English.

Janet Garton

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## Before his time

Criticism and Social Change  
by Frank Lentricchia  
University of Chicago Press, £12.75  
ISBN 0 226 47199 3

Until quite recently the struggle of "Marxist criticism" against a self-regarding, socially elitist, and historically pessimistic traditional critical practice generally took the form of using the enemy's weapons against itself, thus imposing new "readings" upon the canonic texts. It also suggested a new role for the literary critic as a social activist whose efforts should be directed towards transcending the class and ideological shackles of his or her work. This meant seeking out a new audience, and addressing its (proletarian) concerns in a language comprehensive and appropriate. It was not enough to say rude things about Thornton Wilder or Ernest Hemingway. A Marxist critic should actively engage with working-class writing, popular taste, the "sub-literary."

These dual roles seem to have been lost, irretrievably, within current Marxist criticism. In this book Frank Lentricchia devotes himself strictly, and in a language of forbidding opacity, to the forlorn task of opposing the socially conservative implications of current critical theories. His face is resolutely turned towards Antonio Gramsci, Michel Foucault, Jacques Derrida and Paul de Man, and proposes, with the aid of Kenneth Burke, a way of "reading" literary texts, which would in effect be a continuation of the class struggle by other means. There is no point, to one may read between the lines of this book, in talking about seizing the means of production, of storming the Winter Palace of American capitalism; the critics' task lies in the struggle to seize the "means of representation" thereby loosening the enemy's hold upon the linguistic levers of hegemonic power. Prizes those fingers off, impose new "readings" which restore the economic and political dimensions of representation, and in Lentricchia's view the critic will have become a revolutionary intellectual.

Burke, the focus of a Lentricchia book, is something of a puzzle for historians of critical thought. During the era of New Criticism after the Second World War Burke was an outsider, diligently evolving an idiosyncratic and allusive "dramatic" theory of literary action. He included all forms of purposive writing within the "literary", and was as happy analysing *Meln Kampf* as a poem by John Donne. He turns out, as brought forth in respectful homage by Lentricchia, to have been the precursor of much that is valuable in contemporary critical theory. He is "uncannily up-to-date" in anticipating "a major Derridean point of view." Burke reached certain of Foucault's observations as early as 1935. He was, in fact, a structuralist a generation before the term came into common usage, and quite independently he read Karl Marx in a way which Gramsci was doing in an Italian prison.

Lentricchia contrasts Burke with the late Paul de Man, whose work he sees as the most subtle and socially conservative of all the modern exponents of literary theory. The discussion of de Man is no less demanding, and as satisfying, than de Man's own writings. Lentricchia is concerned to show that Burke can be understood within the categories of contemporary theory. So the ontological principle of freedom sanctions Burke's transcendent authority as an interpretative subject because, as the ultimate motor principle of interpretation, the desire that moves all interpretation but is not itself caught up in the conflicts and partialities of interpretation, it is identical with the origin of a history that in itself is a sensation of confusion and understanding, of a narrative process whose futile object is the recovery of freedom for social life.

But having translated Burke into the terminology of our own literary theorists, the result is still a fairly modest and mandarin alternative to the likes of Paul de Man.

Eric Homberger

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## BOOKS

### Matter in motion

Classical Mechanics  
by R. P. Cowan  
Routledge & Kegan Paul, £3.95  
ISBN 0 7102 0280 6  
Classical Mechanics:  
a course of lectures  
by A. K. Raychaudhuri  
Oxford University Press, £7.50  
ISBN 0 19 561 343 0

A physicist must learn both particular experimental facts about the natural world as well as those few general relationships between the myriad facts which we call the "laws of physics". The three areas of "law" that summarize our most fundamental understanding may be roughly classified as classical mechanics, quantum mechanics and field theory (of which last electromagnetism is the most familiar example). The detailed explication of these "laws of law" takes place at many levels of understanding, so that although both these books are succinct lecture note discussions of classical mechanics, one is intended as the first university course in the subject, whereas the other is for advanced students who already have a working knowledge of what is called Newtonian mechanics.

Newton's decisive linking of the ideas of force and rate of change of momentum has enabled physicists to describe matter in motion on scales greater than the atom and in weak gravitational fields and at low velocities. The historical success of Newtonian mechanics is seen alike in the celestial mechanics that supplanted the old Ptolemaic system of calculating planetary orbits and which allows the high precision launching of earth satellites, and also in the engineering of large-scale structures like ships, bridges and aircraft. Newtonian concepts require modification to incorporate the insights of special and general relativity; and they fall decisively in the atomic realm, where they are seen to be only a limiting case of the quantum theory.

To physicists classical mechanics is about force and momentum, but to a mathematician it is about systems of differential equations. Since Newton's times this aspect has made classical mechanics as much part of mathematics as of physics. The same physical content has indeed been repeatedly expressed in increasingly abstract and powerful mathematical guises associated with mathematicians such as Lagrange, Hamilton, Jacobi, Poincaré and in our own time Kolmogorov, Arnold and Moser. In the eighteenth and nineteenth centuries the practical success of classical mechanics served to bolster naive arguments against free

will and for mechanistic determinism; and it is an irony that the most recent developments of classical mechanics completely undercut this aspect of the old determinist controversy.

With such a rich history and content classical mechanics cannot be encapsulated in any one book. As the two texts here discussed are designed for the physicist rather than the mathematician, they each use a familiar physicist's language of simple differential equations and explicit coordinate-based calculation, and they each illustrate well how to do many basic standard problems in mechanics. However, in the more abstract parts of the subject, such as Hamiltonian mechanics, they give little or no idea of the developments since or including Poincaré's work at the beginning of this century.

Cowan's book could be used for a one-term course for first-year students, if the lecturer supplements the explanation at key points (for example, fields of force) and provides additional simple exercises to illuminate topics like rotation of rigid bodies. Certain statements and equations are unclearly expressed and there are misleading and exasperating one-line asides on the history of mechanics.

Most of the book is about vector Newtonian mechanics, but there is a short final chapter introducing the Lagrangian and Hamiltonian formulations. On the final page, there are two unfortunate and incorrect equations in the explanation of the link between classical and quantum mechanics.

Raychaudhuri's more advanced text could serve well for a course beginning at the Lagrangian formulation. However, although there is a good discussion of Lagrangian and Hamiltonian mechanics and the introduction to topics like canonical transformations, the Hamilton-Jacobi method and the adiabatic theorem is clear and workmanlike, the brief account of Noether's theorem and its link with conservation laws is not so clear. And the concluding third of the book covers too much ground (special relativity, Euler angles and top motion, continuum mechanics of elastic bodies and fluids) with insufficient discussion. There are numerous misprints.

Despite these minor criticisms, however, each book can be commended as a useful addition to the range of texts available on this essential and subtle part of physics.

R. B. Jones

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A paperback edition of Francis Halzen and A. D. Martin *Quarks and Leptons: an introductory course in modern particle physics* has been published by Wiley at £12.50. The hardback was reviewed in *The Times*, June 1, 1984.

A selection of essays by and about Abdus Salam has been edited by Z. Hossain and C. H. Lai and published as *Ideas and Realities* by World Scientific (Wiley) at £13.70.

## Stellar canvas

Colours of the Stars  
by David Malin and Paul Murdin  
Cambridge University Press, £13.95  
ISBN 0 521 25714 X  
Secrets of the Sun  
by Ronald Giovanelli  
Cambridge University Press, £11.95  
ISBN 0 521 25522 X  
A Hundred Billion Stars  
by Mario Righi  
MIT Press, £24.95  
ISBN 0 262 18111 8

How do astronomical colours arise? This is the central theme of Malin and Murdin's book. Whereas stars emit light of all colours, but have absorption lines where light has been removed from their continuous spectrum by cold atmospheric gases, the radiation of hot gas clouds tends to be dominated by light of just a few discrete colours.

The identification of the chemical elements responsible for most of the stellar light was one of the major triumphs of astronomy in the early years of this century, involving the suggestion of a non-existent element nebulae, Helium and Mendelevium.

good description of reflection nebulae and of the role of small dust particles in absorbing the scattering light and changing the apparent colours of objects.

The book's title, however, is somewhat deceptive, as it is about much more than this. In particular, the book contains an account of the process of colour photography and of the way in which astronomers can process their photographs so as to overcome their uneven spectral response and produce photographic plates and prints whose colours are true to the object. In addition, there is a discussion of the manner in which the use of photographic techniques sensitive to different colours help to unravel the physical structure of extended objects such as interstellar gas clouds, because the light of different colours is produced in different conditions of temperature and density.

There is also a discussion of the techniques needed to bring out faint details which would not normally be seen. A major strength of the book is the very large number of excellent colour photographs of gas clouds and stars, many of them taken by David Malin, widely regarded as one of the most successful astronomical photographers. All of the special techniques are illustrated in eleven photographs of the Orion Nebula taken using different telescopes and processed in different ways.

This book should appeal most to

## Sensitive robots

The Robotics Revolution: the complete guide for managers and engineers  
by Peter B. Scott  
Blackwell, £19.50  
ISBN 0 631 13162 0

Both the theoretical and practical aspects of robotics are evolving at such a pace that it is becoming increasingly difficult to find experts with a thorough understanding of the overall systems that are being introduced in industry. A study of Scott's book will not produce a robotics expert, but it will provide the reader with a broad picture of current international research, development and industrial applications.

Anyone wishing to design and build a robot of any size or form, will find little practical guidance in this volume and would probably make quicker progress by consulting the popular robotics and microcomputer magazines. There are no robot designs, and even widely used components such as harmonic drives, differential gears, ball screws, angle encoders and motors are only briefly mentioned, without any indication of how they are assembled in an industrial robot and controlled to produce coordinated movement by a computer that may also be processing information from sensors such as television cameras and microphones.

Classifications of robots by external

appearance, their applications and social implications are considered in much greater detail than their internal structure and joint function, although two chapters on robot mechanics provide a useful introduction to these latter. Robot manufacturers are particularly secretive about the internal workings of their products, and rarely, if ever, take the covers off in public. Nevertheless, certain standard components and control techniques have become established: new components tend to be added to, rather than supersede, these, as evolution progresses from first-generation to second-generation robots. Scott defines the latter as robots that "significantly incorporate feedback from external (as opposed to internal) state sensors".

Many examples of robots incorporating vision and tactile sensors are described in association with examples of their wide-ranging applications, including arc welding and cutting, deboning of bacon, and machine and electronic parts assembly. Indeed, there is a bewildering and rapidly increasing choice for the prospective robot purchaser. Industrial managers will find useful advice on how to assess the advantages, disadvantages and economics of introducing robots for suitable applications.

Robots from each manufacturer tend to be restricted to their own software, selectable by key-pad, touch-screen, light pen or graphic tablet from a "menu" on a television monitor screen. There seems little immediate hope of any standardization in the present robot manufacturing hardware and software systems, although one common factor is the

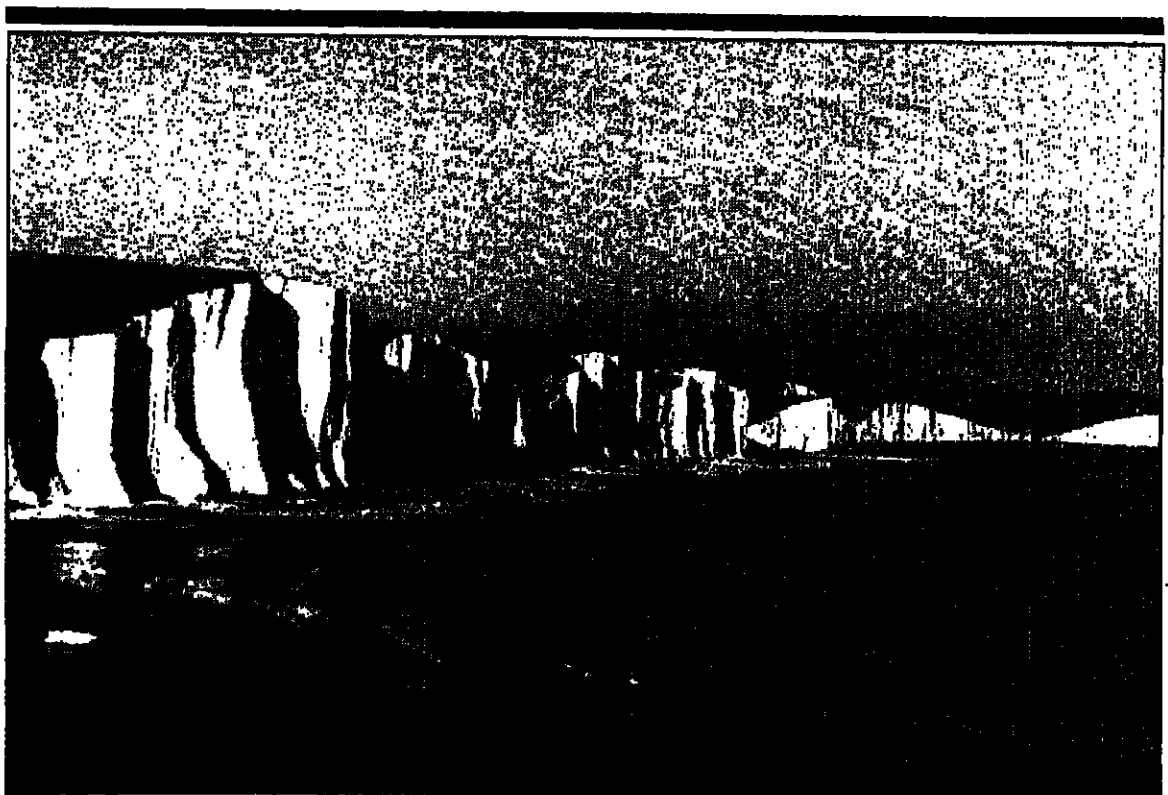
range of five to seven degrees of freedom. In most cases, each degree of freedom is easily seen to be driven by a separate motor and gear unit. An interesting exception is the seven-degrees-of-freedom Spine robot for car body painting. This resembles an elephant's trunk with a spray-gun at the end and has no visible means of actuation. Scott classifies this robot under "present research" nicely illustrating the pace of evolution in robotics: it will be in production and in use on the factory floor by the time you read this review.

Highly sophisticated third-generation robotic systems with multiple wide-range, high-resolution sensors will require the so-called "fifth-generation computers", incorporating artificial intelligence to guide them quickly to new object locations without detailed instructions. Nuclear reactor inspection, maintenance and repair, the mining of raw materials (whether under the sea or on the moon) and unmanned robot factories are cited as possible future applications of intelligent robots.

The *Robotics Revolution* is compulsory reading for anyone seriously interested in present or future developments in robotization and how they may affect our everyday lives. A comprehensive glossary of jargon and acronyms and an equally useful index should help more general readers.

W.K. Taylor

W. K. Taylor is reader in robotics at University College, London.



The Seven Sisters, Sussex, photographed by Charlie Waite. From Adam Nicolson's *Landscape in Britain* (Pavilion: Michael Joseph, £12.95).

## Inside stories

The Art of Autobiography in 19th and 20th Century England  
by A. O. J. Cockshut  
Yale University Press, £10.95  
ISBN 0 300 03235 8

"More folks at twenty years than ten". Thus Thomas Traherne in his poem "The Apostasy". A. O. J. Cockshut quotes the line as a chapter epigraph in his new book - a book intended, as he tells us, to root out answers to the question: "how do people perceive their own nature and development, and what literary forms do they find to convey them to their readers?"

Cockshut's approach to his chosen medley of both famous and obscure nineteenth and twentieth-century autobiographical texts is neither historical nor even merely chronological. Instead, he sets about distinguishing in his material "certain broad general types of character and personal history". In a chapter entitled "The Child Alone", for instance, he isolates as a broad autobiographical category the representation of the child's impulses "to be separate, secret, to find

or imagine or create a solitary world". Having placed the autobiographical interests of figures as various as Forster, Reid (1875-1947), Edwin Muir, and W. H. Hudson (1841-1922) within such a category, Cockshut describes and moralizes upon the contrasting treatments of the impulse towards separation in these writers. Forster Reid's autobiography (*The Apostle*, 1926), for example, deals in regressive tendencies as it demonstrates its author's adult failure to progress beyond the childlike desire for secret imaginary lives. Edwin Muir's *Autobiography* (1940-1954), however, "convincingly wholeness" as it demonstrates a successful reconciliation of the enclosed realm of childhood with the public realm of adult responsibility.

Perhaps the most rewarding of Cockshut's commentaries is that on autobiographical accounts of religious conversion. In a chapter devoted to this kind of personal history he re-creates many universal symptoms of conversion experience. Invoking not only Cardinal Newman but also other, lesser luminaries such as Ronald Knox (1888-1957), Cockshut is particularly good at discriminating the nuances of thought and feeling apparent in one sub-genre of spiritual conversion: the translation from Anglo to Roman Catholicism.

There is much in this lucidly written study that is finely and justly observed. Yet it has to be asked whether the thorough-going common sense of Cockshut's approach is really adequate to the richness and complexity of his subject matter. His interpretative categories are commonplace to the point of being reductively schematic. The chapter on "Conversion" accompanies a chapter on "The Quest" (including "The High Quest" and "The Low Quest"). A chapter entitled "The Child at Home" has one subsection headed "The Dominant Father" balanced against another labelled "The Dominant Mother"; and, lest we should doubt the exclusive authority of this dualism, there is always the third subsection: "A Fluid Background".

Although Cockshut admits that autobiography only fully emerged as "a separate form" in "the early nineteenth century", he never seeks to account for the phenomenon. Some brief general observations on the nature of autobiography appear in the introduction. We learn here that in autobiography an "enormous space" is characteristically given over to childhood, that autobiography is more selective than biography, and that it never deals with the death of the author. But beyond such observations, beyond the categories of interpretation defined by the chapter headings

no theory of autobiography is offered. In a book titled *The Art of Autobiography* an analysis of the relation between perception and form in autobiography would have been welcome; as would an examination of autobiography in relation to other literary manifestations of the subjective impulse in the nineteenth and twentieth centuries. Cockshut does not recognize that it is possible to trace in the period with which he is dealing radical shifts in concepts of selfhood and personal growth. An idea of the healthy maturity of the unified personality emerges as a kind of aesthetic and moral ideal in this work. It is a standard which cannot measure the distance between, say, Wordsworth's celebration in *The Prelude*: "to my conscious soul I now can say - / I recognize thy glory" and Pound's fixed awareness in *Hugh Selwyn Mauberley* of "A consciousness disjunct".

Aidan Day

Dr Day is lecturer in English literature at the University of Edinburgh.

The Society for Theatre Research has published a new study by Richard Poulkes of *The Shakespearean Tragicomedy* of 1869 (London, £7.50).

reading a physics textbook. My impression is that the least knowledge of A-level physics would be desirable if readers are to obtain the maximum benefit.

The book is very clearly written: Righi is particularly strong on his discussion of the relationship between models, theories and observations. However, his style is highly individual: the first time I read the book I was irritated by the way in which he introduces asides on topics which are largely irrelevant to the general theme, such as the morality of experiments on space research and his classification of religion with astrology and other superstitions, which will eventually be swept away when knowledge conquers fear. Each time I have re-read it, however, I have found these asides less obtrusive; and I now consider that he is probably right in thinking that his style will help general readers.

The book is illustrated by photographs, mainly in black and white, after seeing the colour plates in the other two books, it is interesting to be reminded just how much detail can be seen in good black-and-white photographs.

R. J. Taylor

R. J. Taylor is Director of the Astronomy Centre at the University of Sussex.



# BOOKS

## A minor local difficulty

Order Out of Chaos: man's new dialogue with nature  
by Ilya Prigogine and Isabelle Stengers  
William Heinemann, £9.95  
ISBN 0 434 60393 3

Two great paradoxes seem to threaten the peace of mind of physicists. It is those paradoxes which are faced in this book.

First, the well-established laws of Newton (which represent classical mechanics) enable us to take a particle of matter which moves forwards and backwards between reflecting walls and to calculate where it will be, and at what time, in the future. They also enable us to determine where it was at given times in the past. It is this kind of calculation which enables astronomers to forecast the occurrence of eclipses with uncanny accuracy. It is this type of calculation also which enables them to say something about the constellations of stars and planets in biblical times. An exciting and orderly picture may thus be projected, based on the laws of mechanics and a precise knowledge of the positions and velocities of the bodies involved at the present time.

As we extrapolate further into the future or into the past the predictions lose in accuracy. But this is bound to happen; after all it is the same with weather forecasts. So, is this question of accuracy of initial data a minor technical question to be dismissed for the purposes of idealization? Laplace imagined a demon who would make all the necessary calculations. But we are here in danger of falling deeply into error. We now know of many systems subject to the laws of Newton which execute motions that cannot always be calculated with certainty - however small the error in the specification of the initial state. This error, far from being a technical point, becomes an essential ingredient. Initially, determinism may well hold in the sense that the motion has been accurately predicted. However, this accuracy disappears rapidly with lapse of time in such systems, as error feeds upon error to lead to error bars in excess of 100 per cent in the parameter predicted. Systems exhibiting this characteristic are called "chaotic". The first paradox then is that although such systems execute definite motions the theory does not give such a motion, but has to appeal to probabilities. And all this within Newtonian ideas! Quantum mechanics adds its extra dose of probability which we have not even considered.

Before explaining how Ilya Prigogine (professor of chemistry at Université Libre de Bruxelles) and Isabelle Stengers (a historian of science) try to deal with this paradox of the existence of trajectories in chaotic systems, let me note the better-known paradox of irreversibility. This arises because the basic laws of Newtonian mechanics and even of quantum mechanics are unchanged by changing the time parameter to its negative. This is not just a mathematical trick. It means that if we describe the universe, expansion might just as well be contraction as far as the laws are concerned. What is again crucial, however, are the initial conditions which select one of the two types of motions allowed by the laws. The initial explosion selects the expanding model as the better one. Similarly, two particles which attract each other may come together (with some acceleration) or they may move away from each other (with some deceleration). It all depends on what motion has been given to them initially. Thus, particles, collisions are also processes for which may be replaced by - in terms of billiard balls, if two balls approach on a straight line and rebound at some angles, then another collision permitted by the laws of mechanics is one where the balls approach at their angles and rebound so as now to move apart on the same straight line.

When we come to thermodynamics, it is an entirely different story. There is the physics of big things (planets, man, DNA molecules), of little things (atoms, quarks, water molecules) and

the physics of fluctuating smallish things (Brownian motions). The second law holds sway in the macroscopic realm and among the fluctuations. It explains, or perhaps better, it summarizes the tendency to disorder among inanimate matter left to itself. If it is not inanimate or not left to itself, this tendency is greatly modified. So scientists recognize that time-reversibility of (classical or quantum) mechanics, which rules the behaviour of little things, contrasts sharply with the time-directedness of the irreversible macroscopic processes (of inanimate matter left to itself) - like the cooling of tea or how it mixes slowly with milk. This culminates in the famous second law in the form: the entropy of a system left to itself increases. A decrease is not allowed. ("Entropy" is a thermodynamic quantity which measures disorder in some restricted technical sense.)

We have here then an intrinsic directedness in time which is not known in mechanics. Yet the systems described by thermodynamics are just large mechanical systems. The question is how can time-symmetrical collisions, following each other rapidly, and taking place in large numbers, ever give rise to the time-directed entropy law of thermodynamics. This is the paradox of the direction of time, and it is part of the general question of how to explain a science of macroscopic objects, such as thermodynamics, in terms of microscopic pictures. Thermodynamics and mechanics, being both parts of physics, must after all be made compatible so that we can have a consistent theory. This is the "minor local difficulty" which has puzzled scientists for a century.

## Protein synthesis

Proteins: structures and molecular properties  
by Thomas E. Creighton  
Freeman, £33.75  
ISBN 0 7167 1566 X

The study of proteins covers an area where chemistry, physics and biology come together, contributing to it in roughly equal proportions. Most textbooks on the subject have tended to emphasize one of the major disciplines, but lately a text which attempts to be comprehensive. Of course, the author has his own viewpoint, which is physical chemistry, but this is probably the best place from which to cover the whole field in an even-handed manner.

The text is organized into ten chapters which parallel to a large extent the life of a protein molecule and its structural hierarchy: the chemical nature of proteins; protein biosynthesis; evolution; physical forces; conformational changes; proteins in solution; interaction with other molecules; catalysis; and degradation. In addition to the discussion of the salient information, there are descriptions of the most useful experimental techniques. The text is in a narrative form, generally avoiding conflicting points of view or current controversies. Though easy to read in this form, much aided by the author's fluent style, there is a danger that certain ideas or facts may seem more established than they really are. The text is complemented by numerous tables and diagrams, all redrawn in a uniform style. Another good feature is the collecting together of groups of references every few pages.

Inevitably there are costs to pay in attempting this degree of comprehensiveness. Some sections may seem too brief to be of much value: for example, I wonder if the exposition of X-ray diffraction is likely to give the required insight into a somewhat difficult though important technique. Other sections may reveal signs of the author's odd blind-spots: although these do not seem to be at all numerous, molecular evolution seems to be one of them. The chapter on evolution is disappointing on two counts. First, in considering early evolution the intriguing ideas of Leslie Orgel and Francis Crick on the origins of the protein-nucleic acid relationship, which is central to the whole topic, are not discussed; instead we are told, somewhat lamely, that "somehow" the relationship occurred. Secondly, too much space is devoted to point mutations which cannot act as a mechanism for the large-scale evolution of novel protein molecules, at the expense of

The formulation of these two paradoxes here, is not to say that they are formulated as such by the authors and then analysed or explained away. This is in no way a systematic book. But more a work of art in which many threads are interwoven. How then do Prigogine and Stengers make mechanics and thermodynamics compatible (the second paradox)? It is convenient to explain this in four steps.

First, instability of motion means that a small change in the way a system is "pushed" initially leads to completely different motions. The balls on a billiard table exhibit it, a ball rolling in an empty groove does not. Second, for systems with a sufficiently high degree of instability, probabilities rather than deterministic trajectories have to be used to describe the motion. (Exactly how this is to be done is not made very clear.) This leads to the idea of "intrinsically" random motion, and results in increasing "disorder" - or larger entropy. (For the purposes of exposition here I will go along with the authors in regarding entropy as reflecting disorder, although this view should be questioned.) In short, we arrive at the irreversibility of thermodynamics; but not necessarily!

Third, certain initial conditions, which are order-increasing, remain. Imagine an orderly arrangement of balls on a billiard table which is destroyed by one ball. Now reverse all the motions, by imagining a film being taken first and then run it backwards. In this way, we can arrive, by incredible cunning, at an orderly final arrangement. The initial data must be known very accurately in order to achieve this type of feat. (Infinite

accuracy is unattainable.) These feats do not seem to happen in real life except in computer experiments (limited, however, by computational errors). So the second law becomes a selection principle declaring that only those initial conditions can be permitted that lead to the correct result of two possible results - for example, that lead to thermodynamic equilibrium in the future rather than in the past. Fourth, the normal or conventional point of view is that irreversibility emerges at a macroscopic level, as I have explained. Prigogine and Stengers advocate that irreversibility "is true at all levels or none" - an original proposition that will no doubt be much discussed.

The same considerations help the authors to deal with the rather unexpected introduction of probability into classical mechanics (a matter discussed extremely cogently by Max Born in 1955). However, they stop short of considering the crucial point that although specific motions are actually executed by these systems, only probabilities exist for their description. Here I have called this the first paradox. Is the explanation that the specific motions lie at the limit of infinitely accurate starting conditions? If that is ruled out, what is the explanation?

An interesting closed loop type of implication which arises naturally in the book is the following: an observer has a built-in arrow of time, he discovers randomness as he measures dynamical systems, the entropy concept is applied, an arrow of time is found, and so forth. An additional observation might be inserted into this sequence - that new types of order ("dissipative structures") are found as systems are driven strongly far away from equilibrium. A tornado is an orderly object of this type. Thus, chaos and order are deeply intertwined.

If there is one dominant topic, one search, one chief concern in Prigogine's oeuvre, it is the desire to really understand the second law of thermodynamics and its significance in relation to mechanics, biology, philosophy, and indeed cosmology and the rest of the universe. So five years after its publication in France as *La Nouvelle Alliance* an (up-dated) English version has appeared. The wide sweep, taking in physics, biology and this time also some history of physics as well as some philosophy; the new suggestive phrases, apparently precise, but the exact meanings retreating as one looks more carefully; the allusion to non-scientific writers, to poets - it is all here, making this a worthwhile and exciting book.

However, although the book is eloquent and stimulating, more and clearer elementary explanations of the key steps in the scientific arguments might have helped. So might a determined division between the scientific part and the rest. As it is, the book seems poorly organized, with explanations which are often unconvincing, so that the clear single thrust emerges. But this makes it a book to live with, to puzzle over, and to re-read.

### P.T. Landsberg

P.T. Landsberg is professor of mathematics at the University of Southampton.



Stag beetle. From *Animal Forms*, a design resource book collected and arranged by Nigel Billington and John Jeffery (Longman, £5.95).

gene fusion in mosaic genes, which can.

In avoiding some of the more controversial and stimulating ideas in its aim of producing a coherent view of established knowledge, the book presents its subject as something less than the exciting and lively area of science which it really is. The book is also not quite as up to date as it may seem from the reference list, which contains work published only last year but the results of which are not always incorporated in the text. This leads to the unsatisfactory situation that the "established" values for the dihedral angles of the  $\alpha$ -helix quoted in the text have been shown to be incorrect by the latest experimental work; which is referred to without comment.

These criticisms are minor in relation to Tom Creighton's achievements overall. His book's particular quality is its comprehensive coverage of the topic. This, together with the excellent reference list, gives the reader the view of the field as a whole. It will certainly become a standard text for the undergraduate in biochemistry, biophysics and biology, and also a most useful handbook for the researcher.

### C. C. F. Blake

C. C. F. Blake is lecturer in molecular biophysics at the University of Oxford.

lar direction, it is assumed that they are steering on a bearing. When they navigate, they must navigate through a series of steps, but it is not known whether navigation takes place. The importance of the chapter on orientation lies in the survey of various potential mechanisms, one of which has been shown to be inherited. There are good descriptions of Hasler's famous work on olfactory cues and on sun compass orientation. There is also an interesting discussion on the possibility that fish use the electric fields induced as ocean currents or tides flow through the Earth's magnetic field. However, McKown does not cite F. R. Hanson Jones's conclusion (*Fish Migration*, 1968) that in the sea fish tend to drift with tide or current because they have in general no external reference.

The central theme is a long chapter on the physiology of migration. Of particular interest is the control mechanism by which osmoregulation is maintained among those fish which pass from fresh water to salt water and back again. In purely marine fish there is of course an active process by which ions are gained and water lost, whereas in fresh water the animal gains water across its membranes and loses ions. The details of the mechanisms involved are very fully described particularly with regard to the role of prolactin, among other hormones. Much of the information has been obtained from studies on amniotification (or the transformation from part to smolt) in the Pacific salmon. There is also considerable discussion on the endocrine facets of growth and reproduction. The question remains, however, whether a migration is stimulated by the thyroid or whether the endocrine glands have to work because the animals start to migrate.

Some fish migrate for enormous distances, thousands or tens of thousands of kilometers. Harder Jones and his colleagues have shown that some fish in tidal waters proceed by selective tidal transport; they swim with the stream on one tide and they on the bottom of the other. Hence they can proceed with the tide or current to a desired point where the migration stops. The essential problem is to study the responses of fish to the tides and currents in the open sea.

### D. H. Cushing

D. H. Cushing was formerly deputy director of the Fisheries Laboratories, Lowestoft.

A second edition of J. S. Nelson's *Fishes of the World* has been published by Wiley at £42.70.

A paperback edition of D. J. Dave's *Matrix and Finite Element Displacement Analysis of Structures*, reviewed in *The Times* on November 19, 1984, is available at £17.50.

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## Universities

### THE UNIVERSITY OF PAPUA NEW GUINEA Port Moresby

#### PROFESSOR OF ECONOMICS (P.041001/85)

Applicants should have a degree in Economics, a distinguished academic record and an active research interest in some aspects of Economics as it relates to the Third World, including Economic Theory, Development Economics and applied topics especially with reference to development issues. Some experience in Third World countries (not necessarily in teaching) would be an advantage. The appointee will be required to provide academic leadership in teaching and research across the range of programs in Accounting and Economics for which the Department is responsible. The University welcomes applications from persons who would be an asset to the Department from a permanent position. Applications close 31 December 1984.

#### TUTOR/SENIOR TUTOR/LECTURER IN MATHEMATICS (P.121012/85)

Applicants should have experience in teaching mathematics at tertiary level. Preference will be given to applicants with postgraduate degree in Mathematics, although applicants without a postgraduate degree but with extensive teaching and research experience will also be considered. Courses offered in the Department cover pure and applied mathematics, computer science, operations research, numerical analysis and statistics. All staff may be required to contribute to the development and/or first year undergraduate courses. The person appointed will be expected to teach and co-ordinate courses at undergraduate and/or first year level; however, an ability to contribute to higher level courses would be an advantage. Applications close 31 December 1984.

#### LECTURER/SENIOR LECTURER (2 Positions) IN DEPARTMENT OF ANTHROPOLOGY AND SOCIOLOGY (P.011002/85 & P.011010/85)

The first vacancy is for an anthropologist who will be expected to teach in the existing undergraduate and graduate anthropology programmes, as well as contribute to anthropology courses concerned with Malenian ethnography. The successful candidate will be expected to begin duties by July 1985 or as soon as possible thereafter.

The second position is for a social anthropologist, who will be expected to teach current issues, including introductory anthropology and sociology, and to develop new courses in anthropology relevant to students studying in the department as well as to students of other social sciences and of education.

Candidates for both positions should have a Ph.D. or equivalent, and research experience in Malenian, Australian or Pacific. They should also be oriented towards undergraduate teaching and the use of field work in course offerings and be expected to pursue their research interests.

Initial appointments, three years with possible renewal for further periods. Those wishing to arrange an appointment with their current universities and institutions are welcome.

Applicants are also urged to send copies of their applications to the Department of Anthropology and Sociology's Chairmen - from whom further particulars of departmental offerings and staff are available.

Applications for these 2 posts close 1 February 1985.

**SALARY** Professor K22,820, p.a. plus gratuity; Senior Lecturer K20,820, p.a. plus gratuity; Tutor K18,870, p.a. plus gratuity; Lecturer Grade 2 K16,870, p.a. plus gratuity; Lecturer Grade 1 K14,820, p.a. plus gratuity; Senior Tutor K1, K16,820, p.a. plus gratuity; Tutor K1, K14,820, p.a. plus gratuity.

**OTHER CONDITIONS:** The successful applicant will be normally offered a contract for a three year appointment ending at the end of a semester. The gratuity is based on 24% of salary earned and is payable in instalments or lump sum and is taxed at a rate of 2%. In addition to the salaries quoted above, the main benefits include: support for approved research; financial assistance towards the cost of transporting personal effects to and from PNG; 8 weeks annual recreation leave with home airfare available after each 18 months of continuous service; a salary continuation scheme to cover extended illness or death. Applicants who wish to arrange an appointment with their current institutions will be welcomed. The terms and conditions are under review.

Applicants, which will be treated as strictly confidential and should include a full curriculum vitae, a recent small photograph and the names and addresses of 3 referees, should be forwarded to the Deputy Registrar/Staffing, University of Papua New Guinea, Box 220, UNIVERSITY POST OFFICE, Papua New Guinea, to reach him no later than the closing date mentioned. Candidates resident in the UK should send an additional copy to the Secretary General, Association of Commonwealth Universities (WPU), 20 Gordon Square London WC1H 0PP.

### SCHOOL OF AGRICULTURE, ABERDEEN University of Aberdeen in association with The North of Scotland College of Agriculture

#### PROFESSOR OF AGRICULTURAL ECONOMICS

Applications are invited for the above Chair. The post carries responsibilities for the Agricultural Economics Department of the School, and provides unique opportunities for work in agricultural application to the farming industry through the extension service, as well as on prices, marketing and agricultural policy in the wider sphere. Further particulars and application forms from The Secretary, The University, Aberdeen, with whom applications (2 copies) should be lodged by Friday 11 January 1985.

### THE PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY

Applications are invited for vacancies in the following Departments of this University.

#### Department of Architecture and Building

##### Lecturer in Architecture

The successful applicant will be expected to teach first and second year students and to supervise the design of buildings. To be successful the applicant should have an appropriate degree, an teaching experience and a detailed knowledge of history of architecture.

#### Department of Forestry

##### Lecturer

Applicants should have an honours degree in forest engineering or in forestry with appropriate industrial, teaching at tertiary level and/or research experience. A higher degree in forestry engineering would be an advantage. Duties will include undergraduate teaching of Forest surveying with emphasis on applications for large scale forestry projects; technical drawing and graphical presentation of projects; some aspects of forest engineering including productivity studies and incentive schemes in forestry. The appointee will be involved in the supervision of students' projects in selected fields, participation in field course and in short research and specialist courses for field officers. Involvement in course development, research and collaboration with the industry will also be part of the duties of the appointee.

#### Department of Language and Social Science

##### Lecturer III

The Department offers ESP courses for all the professional departments of the University: Accountancy, Business and Computer Studies, Architecture and Building, Chemical Technology, Civil Communication, Electrical and Mechanical Engineering, Fisheries, Forestry, Surveying and Land Studies. A number of these courses are taught jointly with the professional departments. A very small component of the Department's work is concerned with the social aspects of technology on a developing society.

The purpose of language teaching in this University is to assist non-native speakers become efficient students of technology, English, and in the later years, to improve the communication skills they will require as newly-qualified professionals. Courses are therefore very ESP-oriented.

Applicants should have a higher degree in applied linguistics and experience in teaching ESP at tertiary level.

A research interest in one, or more, of the following would be highly relevant: communicative language teaching; psycholinguistics; learning theory; the reading skills applicable to technical literature.

#### Department of Mathematics

##### Lecturer in Mathematics

Applicants must be appropriately qualified and should have a demonstrated teaching and research ability.

The Department of Mathematics provides the courses in mathematics and statistics for students reading for degrees in architecture, accountancy and business studies, chemical technology, engineering, fisheries, forestry and surveying. The Department also runs a postgraduate Diploma in Engineering Mathematics which consists mainly of work in mathematical methods, applied statistics and numerical analysis. It is therefore anticipated that the appointee will have an interest in applications of mathematics and/or statistics.

Initial appointment will be for approximately one year commencing late January or early February 1985. It is possible that the appointment could be extended beyond one year depending on the staffing position in the Department.

#### Department of Applied Physics

##### Senior Technical Officer

Applicants should have experience in instrument maintenance and be qualified to: maintain and repair electronic equipment used for teaching and research; assist with development and construction of teaching aids, and laboratory demonstrators; equipment; assist with laboratory classes and research; assist with the training of laboratory and electronic technicians.

**Salary:** Lecturer K18,820 - K19,870 per annum; Senior Technical Officer K16,820 - K17,445 per annum (K1 + G 0.5810) (level of appointment will depend upon qualifications and experience).

Initial contract period is for 3 years. Other benefits include a gratuity of 24% based on 24% of salary earned and is payable in instalments or lump sum and is taxed at a rate of 2%. In addition to the salaries quoted above, the main benefits include: support for approved research; financial assistance towards the cost of transporting personal effects to and from PNG; 8 weeks annual recreation leave with home airfare available after each 18 months of continuous service; a salary continuation scheme to cover extended illness or death. Applicants who wish to arrange an appointment with their current institutions will be welcomed. The terms and conditions are under review.

Detailed applications (two copies) with curriculum vitae together with the names and addresses of three referees, should be forwarded to the Deputy Registrar/Staffing, University of Papua New Guinea, Box 220, UNIVERSITY POST OFFICE, Papua New Guinea, to reach him no later than the closing date mentioned. Candidates resident in the UK should send an additional copy to the Secretary General, Association of Commonwealth Universities (WPU), 20 Gordon Square London WC1H 0PP.

Applicants should normally hold a second honours degree, and candidates should apply for D.E.S. Studentships.

Further details are available from the Staffing Officer, University of Technology, Private Mail Bag, Lae, Papua New Guinea by 18 December 1984.

Applicants resident in the United Kingdom should also send one copy to Association of Commonwealth Universities (WPU), 20 Gordon Square, London WC1H 0PP, from whom further general information may be obtained.

### UNIVERSITY OF ULSTER SENIOR ADMINISTRATIVE OFFICER (Grade III) at Colerain Ref: C147

Applications are invited for the post of Senior Administrative Officer, to be responsible to the Secretary for the co-ordination and work of his office, with particular responsibility for serving the Council and Senate, and to deputise for the Secretary.

Applicants should be graduates with substantial experience of University administration, preferably in constitutional and legal matters. Commencing salary will be determined by age, qualifications and experience within the Grade III scale: £14,100 - £17,705.

Further details are available from the Staffing Officer, University of Ulster at Colerain, Cromore Road, Colerain, Co Londonderry BT2 1BA (telephone Colerain 441, ext 228) to whom applications including a full curriculum vitae and the names and addresses of three referees should be sent not later than 14 December 1984.

(17241)

### THE UNIVERSITY OF SHEFFIELD DIVISION OF EDUCATION

Applications are invited from suitably qualified men and women for the following two posts.

#### 1. Lectureship in Education (Information Technology) Ref. 182(A/D)

The person appointed will be responsible for developing the Division's work in Information Technology at both the initial and in-service levels of teacher education. Candidates should have an interest in developing the use of microcomputers across the school curriculum. Advanced study/research in education and relevant secondary school teaching experience will be an advantage.

#### 2. Lectureship in Education Ref. 182(B/D)

The person appointed will hold a degree in one of the social sciences relevant to education and will have a strong interest in one of the following areas:

- the education of children with special needs
- the curriculum
- the cultural education
- language in education.

The person appointed will develop work at both initial and in-service levels of teacher education and should have teaching/research experience.

Initial salary for both posts will be in the range £7,560 - £14,655 a year on the scale leading to £14,655 a year. Expected salary of candidates up to about 35 years but older candidates not precluded. Particulars for both posts from the Personnel Department (Academic Staffing), the University, Sheffield S10 2TN to whom applications (five copies) including the names of three referees should be sent by 19 December 1984. (17229)

### SOMERVILLE COLLEGE OXFORD

#### Rhodes Visiting Fellowship for Women

The Rhodes Trustees and Somerville College invite post-doctoral women graduates under the age of 35 who are citizens of Australia, New Zealand, Malaysia, Singapore or Hong Kong to apply for a Rhodes Visiting Fellowship, to reside at the College for two years beginning in October 1985 or January 1986, in order to carry out research in a subject which can profitably be studied at Oxford.

Particulars from the Principal's Secretary, Somerville College, Oxford OX2 6HD.

Applications should reach the Principal not later than 15 February 1985. (17236)

### THE UNIVERSITY OF SHEFFIELD DIVISION OF ECONOMIC STUDIES

#### TWO LECTURESHIPS IN ACCOUNTING AND FINANCIAL MANAGEMENT

Applications are invited from men and women for the above posts. Candidates should be suitably qualified (e.g. good honours degree in relevant discipline) - whilst could include mathematics, computing and economics, or a degree in business studies, economics, business studies and accounting - or holders of higher degrees, possibly combined with relevant accounting experience. The successful candidate will be expected to contribute to the teaching of accounting and financial management at both the initial and in-service levels of teacher education. The successful candidate will also be expected to contribute to the research in accounting and financial management. The successful candidate will also be expected to contribute to the research in accounting and financial management. The successful candidate will also be expected to contribute to the research in accounting and financial management.

Particulars from the Personnel Office (Academic Staffing), the University, Sheffield S10 2TN, to whom applications (five copies) including the names of three referees should be sent by 19 December 1984. (17237)

### The University of Leeds

#### Department of Fine Art

##### M.A. COURSE IN THE SOCIAL HISTORY OF ART

University Session 1985/6

Applications are invited for a one calendar year full-time M.A. course in the Social History of Art. The course will be taught by the Department of Fine Art, and will involve a combination of seminars and lectures on the problems of theory and method in the construction of a social historical account of art. Students will also study a specific period of art, and will be encouraged to test out their ideas in the form of essays and a dissertation. The successful candidate will produce a 10,000 word dissertation.

Applicants should normally hold a second honours degree, and candidates should apply for D.E.S. Studentships.

Further particulars and application forms are available from the M.A. Administrator, The University of Leeds, Leeds LS2 9JT. Closing date for all applications is 15 January 1985. (17247)

#### UMIST

##### Department of Mechanical Engineering

##### LECTURER

Applications are invited for a Lectureship to be held in the Applied Mechanics Division of the Department of Mechanical Engineering. A research/teaching post, involving the dynamics of solids or structures, with interests in dynamic structural plasticity, crashworthiness or other areas of impact mechanics would be the most desirable. The successful candidate will be expected to contribute to the teaching of applied mechanics at both the initial and in-service levels of teacher education. The successful candidate will also be expected to contribute to the research in applied mechanics. The successful candidate will also be expected to contribute to the research in applied mechanics.

Applicants should normally hold a second honours degree, and candidates should apply for D.E.S. Studentships.



## Universities continued

## University of Swansea

## Lecturer

Applications are invited for a new post of Lecturer in the Department of Chemical Engineering. The person appointed will be expected to lecture to undergraduate students on both the three and four year courses and to postgraduates. The successful candidate will join a group of staff carrying out research on the technology of suspension of fine particles and the processing of non-Newtonian fluids and previous experience should be such as to enable him/her to make a contribution to the work of the team. Valuable links with industrial firms have already been established and the new member of staff will be expected to help in their future development.

The appointment, which will commence from the autumn date that can be arranged, will be on the scale £7,500 - £14,925 per annum plus USS/USDP benefits.

Informal enquiries and discussions will be welcomed by the Head of the Department, Professor J. F. Richardson, but further particulars and application forms (2 copies) must be obtained from the Personnel Office, University College of Swansea, Singleton Park, Swansea, SA2 8PP, to which office they should be returned, Monday, February 1985. (17306)

University of Wales  
TOWN PLANNING LECTURER

(fixed term, three years)  
PLANNING THEORY

Salary £7,500-£9,300 per annum  
Requests (quoting Ref. C.6) for details and application form to Staffing Office, UWIST, PO Box 68 Cardiff CF1 3XA. Closing date: 11 January 1985 (17324)

## The University of Sussex

## CHAIR OF MATHEMATICS

Applications are invited for the post of Professor of Mathematics from 1st October 1985. The person appointed will have research interests within one of the fields encompassed by the Department in the broadest sense. The person appointed will be expected to teach and supervise research in the field of mathematics and to contribute to the development of the Department. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be not less than £10,070 with University pension and other benefits.

Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of Sussex, Falmer, Brighton BN1 9QJ. (17349)

## The University of Manchester

## LECTURER IN EDUCATION (PRIMARY)

Applications are invited for the above post commencing January 1st, 1985 or as soon as possible. The person appointed will be expected to teach and supervise research in the field of primary school education. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be not less than £10,070 with University pension and other benefits.

Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of Manchester, Oxford Road, Manchester M13 9PL. (17349)

UNIVERSITY OF EAST ANGLIA  
Norwich  
SENIOR LECTURER/  
READER IN  
ACCOUNTANCY AND  
FINANCE

Applications are invited for the above post in the School of Computing Studies and Accountancy. Applications from all areas of accountancy and finance will be considered although an emphasis will be placed on the area of taxation. The appointment will commence as soon as possible after 1st January 1985. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

Applications (three copies) which should include a full curriculum vitae, including exact date of birth, together with the names and addresses of three persons to whom reference may be made, should be lodged with the Establishment Officer, University of East Anglia, Norwich NR4 7TJ (telephone 0693 59181 ext. 2126) from whom further particulars may be obtained, not later than 20 December 1984. No forms of application are issued. (17318)

University of Dundee  
Department of Physiology  
There is a vacancy for a  
LECTURER  
IN PHYSIOLOGY

to teach medical, dental and other students in the Department of Physiology. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits. (17320)

University of Newcastle upon Tyne  
Registrar's Office  
ADMINISTRATIVE ASSISTANT

Applications are invited from graduates or the holders of equivalent qualifications for the post of Administrative Assistant in the Registrar's Office. The duties of the post will be mainly concerned with the collection and collation of data on the teaching and research activities of the University. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of Newcastle upon Tyne, NE1 7RU. (17349)

## The Queen's University Belfast

## LECTURER IN BUSINESS STUDIES

Available from the earliest date, a new post of Lecturer in Business Studies is available. The person appointed will be expected to teach and supervise research in the field of business studies. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of Belfast, Belfast BT7 1NN. (17349)

The University of Papua New Guinea  
Port Moresby

## Applications are invited for the post of

LECTURER  
(RESEARCH)  
EDUCATIONAL RESEARCH UNIT  
(EX 642/85)

The ERU is to conduct an on-going evaluation of the National Department of Education's Community School Agricultural Pilot Project. The Project is based in sixteen (16) schools in the Asaro and Kaituma Districts of the Eastern Highlands and Morobe Provinces.

Regular evaluation reports to the Project participants, co-ordinators and headquarters staff at the Curriculum Unit in Port Moresby will be required. Applicants should possess a relevant higher degree and also some background in curriculum development. Preference will be given to applicants with experience in education and in working in a developing country. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of Papua New Guinea, Port Moresby. (17349)

University of Dundee  
Department of Physiology  
There is a vacancy for a  
LECTURER  
IN PHYSIOLOGY

to teach medical, dental and other students in the Department of Physiology. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

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University of Newcastle upon Tyne  
Registrar's Office  
ADMINISTRATIVE ASSISTANT

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Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of Newcastle upon Tyne, NE1 7RU. (17349)

## The Queen's University Belfast

## LECTURER IN BUSINESS STUDIES

Available from the earliest date, a new post of Lecturer in Business Studies is available. The person appointed will be expected to teach and supervise research in the field of business studies. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of Belfast, Belfast BT7 1NN. (17349)

University of The West Indies  
Mona, Jamaica

## Applications are invited for the post of

PROFESSOR/  
SENIOR LECTURER  
IN PHYSICS

The appointment is to be made in the field of Electronics. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of The West Indies, Mona, Jamaica. (17349)

University of Dundee  
Department of Physiology  
There is a vacancy for a  
LECTURER  
IN PHYSIOLOGY

to teach medical, dental and other students in the Department of Physiology. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

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University of Newcastle upon Tyne  
Registrar's Office  
ADMINISTRATIVE ASSISTANT

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Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of Newcastle upon Tyne, NE1 7RU. (17349)

## The Queen's University Belfast

## LECTURER IN BUSINESS STUDIES

Available from the earliest date, a new post of Lecturer in Business Studies is available. The person appointed will be expected to teach and supervise research in the field of business studies. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of Belfast, Belfast BT7 1NN. (17349)

The University of Leeds  
School of Education

## Applications are invited for the post of

LECTURER  
(TECHNOLOGY)  
EDUCATION

Applications are invited for the above post allocated under the School of Education. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of Leeds, Leeds LS2 9JT. (17349)

University of Dundee  
Department of Physiology  
There is a vacancy for a  
LECTURER  
IN PHYSIOLOGY

to teach medical, dental and other students in the Department of Physiology. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

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University of Newcastle upon Tyne  
Registrar's Office  
ADMINISTRATIVE ASSISTANT

Applications are invited from graduates or the holders of equivalent qualifications for the post of Administrative Assistant in the Registrar's Office. The duties of the post will be mainly concerned with the collection and collation of data on the teaching and research activities of the University. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of Newcastle upon Tyne, NE1 7RU. (17349)

## The Queen's University Belfast

## LECTURER IN BUSINESS STUDIES

Available from the earliest date, a new post of Lecturer in Business Studies is available. The person appointed will be expected to teach and supervise research in the field of business studies. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of Belfast, Belfast BT7 1NN. (17349)

Universities of London and Paris  
The British Institute in Paris

## Applications are invited for the post of

LECTURERSHIP  
IN ENGLISH

Candidates should be native or near-native speakers of English and have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of London, London WC2N 6AT. (17349)

University of Dundee  
Department of Physiology  
There is a vacancy for a  
LECTURER  
IN PHYSIOLOGY

to teach medical, dental and other students in the Department of Physiology. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

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University of Newcastle upon Tyne  
Registrar's Office  
ADMINISTRATIVE ASSISTANT

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Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of Newcastle upon Tyne, NE1 7RU. (17349)

## The Queen's University Belfast

## LECTURER IN BUSINESS STUDIES

Available from the earliest date, a new post of Lecturer in Business Studies is available. The person appointed will be expected to teach and supervise research in the field of business studies. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of Belfast, Belfast BT7 1NN. (17349)

## Universities continued

University of London  
Institute of Education  
SENIOR RESEARCH OFFICER  
AND RESEARCH OFFICER

Applications are invited for the above posts allocated under the Institute of Education. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of London, London WC2N 6AT. (17349)

University of Dundee  
Department of Physiology  
There is a vacancy for a  
LECTURER  
IN PHYSIOLOGY

to teach medical, dental and other students in the Department of Physiology. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

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University of Newcastle upon Tyne  
Registrar's Office  
ADMINISTRATIVE ASSISTANT

Applications are invited from graduates or the holders of equivalent qualifications for the post of Administrative Assistant in the Registrar's Office. The duties of the post will be mainly concerned with the collection and collation of data on the teaching and research activities of the University. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of Newcastle upon Tyne, NE1 7RU. (17349)

## The Queen's University Belfast

## LECTURER IN BUSINESS STUDIES

Available from the earliest date, a new post of Lecturer in Business Studies is available. The person appointed will be expected to teach and supervise research in the field of business studies. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of Belfast, Belfast BT7 1NN. (17349)

University of Oxford  
St. John's College  
COLLEGE LECTURESHIP  
IN PHILOSOPHY

Applications are invited from suitably qualified persons for the above post allocated under St. John's College. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of Oxford, Oxford OX1 2JD. (17349)

University of Dundee  
Department of Physiology  
There is a vacancy for a  
LECTURER  
IN PHYSIOLOGY

to teach medical, dental and other students in the Department of Physiology. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits. (17320)

University of Newcastle upon Tyne  
Registrar's Office  
ADMINISTRATIVE ASSISTANT

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Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of Newcastle upon Tyne, NE1 7RU. (17349)

## The Queen's University Belfast

## LECTURER IN BUSINESS STUDIES

Available from the earliest date, a new post of Lecturer in Business Studies is available. The person appointed will be expected to teach and supervise research in the field of business studies. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of Belfast, Belfast BT7 1NN. (17349)

Brunel University  
Faculty of Education and De-

## Applications are invited for the post of

LECTURESHIP  
IN DESIGN  
AND TECHNOLOGY

Applications are invited for the above post allocated under the Faculty of Education and Design. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, Brunel University, Uxbridge, Middlesex. (17349)

University of Dundee  
Department of Physiology  
There is a vacancy for a  
LECTURER  
IN PHYSIOLOGY

to teach medical, dental and other students in the Department of Physiology. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits. (17320)

University of Newcastle upon Tyne  
Registrar's Office  
ADMINISTRATIVE ASSISTANT

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Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of Newcastle upon Tyne, NE1 7RU. (17349)

## The Queen's University Belfast

## LECTURER IN BUSINESS STUDIES

Available from the earliest date, a new post of Lecturer in Business Studies is available. The person appointed will be expected to teach and supervise research in the field of business studies. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of Belfast, Belfast BT7 1NN. (17349)

University of Dundee  
Department of Forensic Medicine

## Applications are invited for the post of

SENIOR FORENSIC  
PATHOLOGIST

Applications are invited for the above post allocated under the Department of Forensic Medicine. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of Dundee, Dundee DD1 1TA. (17349)

University of Dundee  
Department of Physiology  
There is a vacancy for a  
LECTURER  
IN PHYSIOLOGY

to teach medical, dental and other students in the Department of Physiology. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

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University of Newcastle upon Tyne  
Registrar's Office  
ADMINISTRATIVE ASSISTANT

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Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of Newcastle upon Tyne, NE1 7RU. (17349)

## The Queen's University Belfast

## LECTURER IN BUSINESS STUDIES

Available from the earliest date, a new post of Lecturer in Business Studies is available. The person appointed will be expected to teach and supervise research in the field of business studies. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, University of Belfast, Belfast BT7 1NN. (17349)

St. Anne's College  
Oxford

## Applications are invited for the post of

JUNIOR RESEARCH  
FELLOWSHIP

Applications are invited for the above post allocated under St. Anne's College. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

Further particulars and application forms (closing date 5.1.1985) from Mrs. S. C. Wright, Personnel Office, St. Anne's College, Oxford OX1 2JD. (17349)

University of Dundee  
Department of Physiology  
There is a vacancy for a  
LECTURER  
IN PHYSIOLOGY

to teach medical, dental and other students in the Department of Physiology. The successful candidate will be expected to have a high level of research achievement and to be able to attract research funds. The salary will be an appropriate point on the University's salary scale, £14,135 to £17,705 per annum plus USS benefits.

The successful candidate



## Polytechnics continued

LANCASHIRE POLYTECHNIC at PRESTON

## Faculty of Technology

Applicants are invited for the following new posts in ENGINEERING:  
SCHOOL OF MECHANICAL & PRODUCTION ENGINEERING

### Lecturer II/Senior Lecturers

(Two Posts) Ref AA/168

### Senior Assistant: Teaching Company Scheme.

Ref AA/167 (One Post: three year appointments)

### Research Assistant

Ref AA/168

SCHOOL OF ELECTRICAL & ELECTRONIC ENGINEERING

### Lecturer II/Senior Lecturers

(Three Posts) Ref AA/169

### Research Assistant

Ref AA/170

Posts AA/168 and AA/167 (Mechanical & Production Engineering) Applicants are particularly welcome from candidates with experience of engineering applications and computer aided methods in Dynamics, Stress Analysis, Design, Manufacturing Systems or Robotics.

Posts AA/169 (Electrical & Electronic Engineering) Specialists in Computer Aided Engineering and the Communications or VLSI aspects of I.T. are particularly relevant to current developments in the School. However, candidates may offer alternative specialisms in other areas of modern electronic engineering.

Post AA/168 (Mechanical & Production Engineering) The project involves the application of computer aided techniques in design and performance of driveline components in vehicle transmissions. Applications are welcome from candidates with interests in the applied and solid mechanics areas of mechanical engineering and mathematics or computing. Regular contact with the collaborating company will be an essential feature of the project. Dr. D. R. Kerr is available for preliminary enquiries - ext. 2131.

Post AA/170 (Electrical & Electronic Engineering) Research projects are available in Digital Signal Processing, Image Processing, Digital Control, Instrumentation Systems, Video text aid for the disabled, Hybrid and VLSI microelectronics, Robotics, Optical Communications, Power electronics switching. Prof. N. G. Burrow is available for preliminary enquiries - ext. 2200.

Further details and application forms are available from the Personnel Office, Lancashire Polytechnic, Preston, PR1 2TG, Tel. (0772) 260227 quoting the appropriate reference number.

Salary Scales: Senior Lecturer £11,178 to £13,128 (Bar) to £14,061 Lecturer II £7,548 to £12,059

Senior Assistant: Teaching Company Scheme: £10,710 to £13,026 Research Assistant: £6,405 to £7,176

Final date for receipt of completed applications - 17th December 1984

LANCASHIRE  
POLYTECHNIC  
AT PRESTON

Lancashire Polytechnic at Preston

School of Physics &amp; Astr.

### TEMPORARY LECTURER II

This post arises from the recruitment of a member of staff. Available from 1st January 1985. The successful candidate will be responsible for the delivery of the course and for the supervision of the students.

Salary: £7,548 - £9,771

Application forms and further details are available from the Personnel Office, Lancashire Polytechnic, Preston, PR1 2TG, Tel. (0772) 260227.

Closing date: 17th December 1984. (54104) HS

Kingston Polytechnic School of Economics and Pol.

### PART-TIME LECTURERS

Required for the Spring and Summer Terms 1985, to teach British Government on degree and postgraduate courses in the field of Local Government studies. A good knowledge of the subject and preferably some teaching experience is sought.

Applicants should write with CV to Dr. M. J. Hawley, School of Economics and Pol., Kingston Polytechnic, Penrhyn Road, Kingston upon Thames, Middlesex TW20 0EX. Closing date: 15th December 1984. (54499) HS

The Polytechnic is an Equal Opportunities Employer.

### DUNDEE COLLEGE OF TECHNOLOGY

Department of Business Studies

### LECTURESHIP IN MARKETING

The person appointed will be required to teach marketing in courses up to honours degree level. Applicants must have an honours degree in an appropriate discipline and have teaching, research and/or industrial experience.

A vacancy exists (currently under review): £8,688-£12,777 (bar) - £13,716, with initial placing depending upon approved pay scale. Financial assistance towards the cost of removal expenses may be payable. Further particulars and application form obtainable from the Personnel Officer, Dundee College of Technology, Ball Street, Dundee DD1 1HG to whom completed applications should be returned by 21 December 1984. (17247)

### The Polytechnic of North London

Department of Mathematics, Statistics and Computing

### TEMPORARY LECTURER GRADE I IN COMPUTING

Temporary appointment for six months from January 1985 or as soon as possible thereafter.

Applicants should possess skills in any applied computing area, such as systems analysis, software development, programming, systems analysis and design, data communications etc.

Applications are especially welcomed from those who have worked on applied projects who would like a period in a teaching environment. Recently qualified candidates with less experience will be considered.

Candidates should have either a relevant good honours degree, postgraduate qualification, MSc or equivalent practical experience. The Department offers a 3-year programme of study leading to a Postgraduate Diploma in Computing.

The Polytechnic has a DEC KL1081 computer system providing a general multi-access and batch processing system. The Department has an excellent range of microprocessor equipment, a PDP-11 and a 3-station Cambridge Ring LAN.

Salary scale: £7,548 - £12,059 plus £387 London Allowance.

Application form and further details are available from the Personnel Office, Polytechnic of North London, Holloway Road, N7 8RN.

Closing date: 14 days from the appearance of this advertisement. (54494) HS

City of Birmingham Polytechnic

An equal opportunities employer

Faculty of the Built Environment

Built Environment Learning Service

### RESEARCH ASSISTANT (1/2 OF FULL-TIME)

(Temporary appointment until 31.08.85)

The person appointed will be responsible to the Director of the Faculty of the Built Environment for the research and development work in the Faculty.

Qualifications required are a good first degree and interest in Built Environment subjects.

Post available immediately.

Salary: £11,178 - £13,128

Application forms and further details from the Personnel Office, City of Birmingham Polytechnic, Edgbaston, Birmingham B15 2TT. Tel. (091) 276 2100.

Closing date: 14th December, 1984. (54497) HS

Polytechnic of Central London

DEPUTY HEAD OF LIBRARY SERVICES

Applications are invited from suitably qualified persons for the post of Deputy Head of Library Services. The successful candidate will be responsible for the day-to-day running of the library and for the supervision of the staff.

Salary: £11,178 - £13,128

Further particulars and application forms are available from the Personnel Office, Polytechnic of Central London, 200 Regent Street, London W1B 5AH.

Closing date: Friday 14th December 1984.

For an equal opportunity employer. (54497) HS

PLEASE MENTION THE T.H.E.S. WHEN REPLYING TO ADVERTISEMENTS

Leicester Polytechnic

Faculty of Art and Design

### LECTURER II FILM AND TELEVISION STUDIES

(Post No. 66)

£7,548 - £12,059 p.a.

A vacancy exists for a full-time lecturer in Film and Television Studies in the Faculty of Art and Design. The successful candidate will be expected to teach on faculty based programmes. Applications are invited from those who have a postgraduate qualification in Film Studies, preferably with previous experience of teaching at undergraduate level.

Application forms and further details are available from the Personnel Office, Leicester Polytechnic, P.O. Box 143, Leicester LE1 7RH. Tel. (0533) 551551, Ext. 8303.

Closing date: 14th December, 1984. (54110) HS

City of Birmingham Polytechnic

An Equal Opportunities Employer

Faculty of Built Environment

Department of Planning and Landscape

### SENIOR LECTURER IN PLANNING

Required on January 1st or as soon as possible thereafter.

Preference may be given to a planner with experience of housing development, including public sector housing and/or the supervision or financial control of other private/public sector major developments.

Salary Scale: Senior Lecturer £11,178 - £13,128 (bar) £14,061 p.a.

Further details and application forms from the Personnel Office, City of Birmingham Polytechnic, Edgbaston, Birmingham B15 2TT. Tel. (091) 276 2100.

Closing date: 14th December, 1984. (54108) HS

## Colleges and Departments of Art



### WEST SURREY COLLEGE OF ART AND DESIGN

Farnham

The college is seeking to appoint from April 1985 a

Vice Principal

to work with Mr John Morris, previously Vice-Principal and recently appointed Principal.

Salary (for Group V College) £17,942 p.a. plus £258 p.a. Fridge Area London Allowance.

Further particulars and application forms (s.a.e.) may be obtained from County Education Officer (FEMED), County Hall, Penrhyn Road, Kingston-upon-Thames, Surrey, KT1 2DJ to whom completed forms should be returned not later than 14 December 1984. (17214)

Librarians

CAMBRIDGE UNIVERSITY LIBRARY

### Assistant Under-Librarian (Japanese)

Applications invited from good honours graduates in Japanese. Research and/or library qualifications or experience also highly desirable.

Stipend on the Assistant Under-Librarian scale: £9,380 to £12,150.

Further particulars from the University Librarian, Secretary of the Appointments Committee for the University Library, University Library, West Road, Cambridge, CB3 9DR, to whom applications should be sent by 31 December 1984. (17222)

## Colleges and Institutes of Higher Education

### Cambridge University Library

### Assistant Under-Librarian (Japanese)

Applications invited from good honours graduates in Japanese. Research and/or library qualifications or experience also highly desirable.

Stipend on the Assistant Under-Librarian scale: £9,380 to £12,150.

Further particulars from the University Librarian, Secretary of the Appointments Committee for the University Library, University Library, West Road, Cambridge, CB3 9DR, to whom applications should be sent by 31 December 1984. (17222)

South Glamorgan County Council

SOUTH GLAMORGAN INSTITUTE OF HIGHER EDUCATION (CARDIFF)

FACULTY OF SCIENCE

DEPARTMENT OF FOOD STUDIES & SERVICE INDUSTRIES

Applications are invited for the post of

LECTURER GRADE 1/2 IN FOOD TECHNOLOGY

in Food Technology and Higher National Diploma Courses. Applicants should be qualified to teach at least at the level of Food Technology or a closely related area and preferably have some research or research experience.

The successful applicant will be required to teach generally across the field of Food Technology and to be responsible for the delivery of the course. The successful candidate should be able to supervise the work of the students in the laboratory.

Salary Scale: £11,178 - £13,128 (bar) £14,061 p.a.

Further details and application forms are available from the Personnel Office, South Glamorgan Institute of Higher Education, Cardiff CF2 2ED. Tel. (01446) 834444.

Closing date: 14th December, 1984. (54499) HS

Athrofa Gogledd-dd Cymru

The North E Wales Institute

of higher education

CONNAH'S QUAY, DEESIDE, CLWYD.

SCHOOL OF MANAGEMENT, BUSINESS & TRADE UNION STUDIES

### MICROELECTRONICS: TRAINING MATERIALS WRITER (Temporary)

(Academic related £7,548 - £12,059)

Applicants should have a relevant degree and/or membership of a professional body such as BCS. We look to the person appointed to assist us in the writing and development of distance learning materials, including software packages and possibly inter-active video. Applicants should be conversant with Pascal, Basic and Assembler. Initially the post is a fixed term contract for one year, with the possibility of extension to a second year.

Further details and application form available from the Registrar, The North East Wales Institute, Connaah's Quay, Deeside, Clwyd. Tel. Deeside 917531 Ext. 254. Closing date for receipt of applications: 1st December 1984. (17210)

## Colleges and Institutes of Higher Education continued

Bedfordshire Education Service

LUTON COLLEGE OF HIGHER EDUCATION

Applications are invited for the following senior appointments to take effect from 1 May 1985 or earlier if possible.

### DEPUTY DIRECTOR

salary: Group 8 £20,633

Applicants should have substantial experience of successful course development activities in a leadership capacity, together with management and administrative experience at a senior level.

### HEAD OF DEPARTMENT OF ENGINEERING TECHNOLOGY

salary: Grade V £17,199-£18,189

Applicants should be very well qualified in Mechanical, Production, Electronic or Computer Engineering, and must have the drive and ability to move the Department forward rapidly, especially in the application of computer technologies.

### PRINCIPAL LECTURER IN INFORMATION SYSTEMS

salary: £13,095-£16,467

A new post of central importance to the creation of further internal academic and administrative information networks to facilitate the efficient management of resources. Systems Analyst skills coupled with an appreciation of the academic ethos of a higher education college essential. Small teaching commitments.

The College has a wide range of full-time and part-time courses at both advanced and non-advanced levels, including CNA and BTEC validated courses principally in Business Administration, Sciences and Technologies. SAE for application forms and further details from The Director's Secretary, Luton College of Higher Education, Park Square, Luton LU1 3JL.

Closing date: 14 January 1985.

BEDFORDSHIRE IS AN EQUAL OPPORTUNITIES EMPLOYER. (17227)

HONG KONG BAPTIST COLLEGE

### Head of Communication Department

Hong Kong Baptist College is one of five publicly-funded institutions of higher education in Hong Kong, offering 3 years post 'A' level courses. It is currently in a phase of rapid development in academic and resources terms: the present student establishment of 2100 students will expand by about 50% over the next six years.

Candidates for this post should have a minimum qualification of a Master's Degree in one or more aspects of Communication or Media Studies, an appropriate research background and/or substantial professional experience in the mass media. The Head of Department will be expected to play a major part in developing an honours degree programme, and should be able to establish good working relationships with the Hong Kong press, TV and film industries. Knowledge of Chinese would be an advantage, but others with appropriate experience and an English-speaking background are also invited to apply.

Salary scale: HK\$16,000 p.m. (by 6 increments) (starting salary will be commensurate with qualifications and experience).

Conditions of Service: Appointment will be made on Superannuation Terms (College contributes 15% of appointee's salary while appointee contributes 5% of the same to the Superannuation fund). Other benefits include vacation leave (about 3 months after completed 21 months of service), medical and dental benefits, education allowance for children, and housing allowance. Overseas appointees may be considered for a two-year gratuity bearing contract as deemed necessary.

Application forms and further information are obtainable from the Personnel Secretary, Hong Kong Baptist College, 224 Waterloo Road, Kowloon, Hong Kong. Completed forms together with testimonials should reach the Personnel Secretary by 1st January 1985. (17307)

SOUTH GLAMORGAN COUNTY COUNCIL

SOUTH GLAMORGAN INSTITUTE OF HIGHER EDUCATION (CARDIFF)

FACULTY OF SCIENCE

DEPARTMENT OF FOOD STUDIES & SERVICE INDUSTRIES

Applications are invited for the post of

LECTURER GRADE 1/2 IN FOOD TECHNOLOGY

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The successful applicant will be required to teach generally across the field of Food Technology and to be responsible for the delivery of the course. The successful candidate should be able to supervise the work of the students in the laboratory.

Salary Scale: £11,178 - £13,128 (bar) £14,061 p.a.

Further details and application forms are available from the Personnel Office, South Glamorgan Institute of Higher Education, Cardiff CF2 2ED. Tel. (01446) 834444.

Closing date: 14th December, 1984. (54499) HS

South Glamorgan County Council

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Closing date: 14th December, 1984. (54499) HS

South Glamorgan County Council

SOUTH GLAMORGAN INSTITUTE OF HIGHER EDUCATION (CARDIFF)

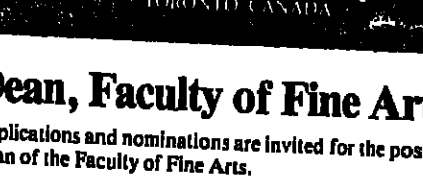
FACULTY OF SCIENCE

DEPARTMENT OF FOOD STUDIES & SERVICE INDUSTRIES

Applications are invited for the post of



## General Vacancies



**YORK UNIVERSITY**  
TORONTO, CANADA

**Dean, Faculty of Fine Arts**

Applications and nominations are invited for the position of Dean of the Faculty of Fine Arts.

The Faculty of Fine Arts, the largest of its kind in Canada, consists of the Departments of Dance, Film/Video, Music, Theatre and Visual Arts, with graduate studies in all departments. There are approximately 90 full-time faculty and 1400 students.

Candidates should be distinguished scholars and/or artists in one or more of the five areas, and should have an understanding of the other disciplines. They should have qualifications appropriate to a senior faculty appointment within a department and preferably have administrative experience. The appointment is normally for a term of five years, and commences July 1, 1985.

Applications and nominations will be accepted until December 31, 1984 and should be submitted to:

Professor Stanley Beck, Chairman, Search Committee for the Dean of Fine Arts, Room 417, Osogode Hall Law School, York University, Downsview (Toronto), Ontario

**Department of Education and Science**

**H.M. Inspectors of Schools**

Applications are invited from men and women, preferably aged between 35 and 45, for appointment in England as H.M. Inspectors. H.M. Inspect educational institutions as part of both general and specialist assignments and provide advice to the Department and throughout the education system.

Current vacancies are for specialists in:

**SECONDARY EDUCATION**  
**Home Economics: Ref. 9085**

Candidates should have good specialist qualifications and substantial experience of teaching Home Economics in schools. Experience at senior level in schools, or in teacher training or of advisory work would be an advantage.

**Mathematics: Ref. 9086**

Candidates should have good academic qualifications in mathematics, substantial experience of teaching the subject in schools, colleges or universities and a wide interest in education. Experience in teaching statistics to 'A' level or in teaching primary mathematics would be an asset. Relevant experience in industry or in teacher training would be an additional advantage.

**Science: Ref. 10085**

Candidates should have a degree, or an equivalent qualification, in one or more of the main sciences. Experience of teaching science to pupils of different abilities in a secondary school is essential, and it is desirable for applicants to be interested in primary science or technology or the education and training of teachers. Applications will be particularly welcomed from those who have experience of co-ordinating health education programmes in primary or secondary schools.

priority will be given to Canadian citizens and permanent residents of Canada.

**Yarmouk University  
Irbid, Jordan  
Institute of  
Archaeology  
and Anthropology  
Department of Anthropology**

Newly established department invites applications for several posts starting September 1985 to teach MA courses with special emphasis on one or more of the following areas:

**SOCIAL THEORY  
SOCIOLOGY OF  
DEVELOPMENT AND**

**PRIMARY EDUCATION: Ref. 11/85**  
Candidates should have fundamental and appropriate teaching experience and knowledge of current thinking and practice relating to the curriculum and organisation within the 3 to 13 age range. The person who has knowledge and experience of developments in education in the early years will be particularly welcome.

**YOUTH AND COMMUNITY: Ref. 12/85**  
Candidates should have relevant professional or academic training and substantial experience of youth and community work. Experience in both statutory and voluntary sectors or in youth work training would be an advantage. Candidates should also have experience of working with young people in schools or in the community in cases of substantial ethnic minority settlement. A broad interest in either secondary or further and higher education is required.

Starting salary for all posts is within the range £16,200-£21,800. Relocation expenses of up to £5000 may be payable.

Application forms (to be returned as soon as possible and not later than 14 December 1984) and further information may be obtained from Mr E D Porter, Department of Education and Science, 39 York Road, London, SE1 7PH. Telephone: 01-928 9222, extensions 2466, 2786 or 2487.

The Civil Service is an equal opportunity employer.

(17725)

 **UNIVERSITY OF CAPE TOWN**

**Lecturer In  
History Education**

Applications are invited for the above post, vacant from 1 July 1985 or as soon as possible thereafter. The successful applicant will be required to teach both primary and secondary students in the method of teaching history and also graduate students in curriculum studies, with special reference to history. A personal interest in classroom research and a willingness to supervise student research projects and teaching practice are essential. Salary: R7 267 - R28 888 per annum, plus an annual bonus of nearly one month's salary and attractive staff benefits.

Applications should include a curriculum vitae and the names and addresses of three referees and be sent to the Registrar (Attention: Appointments Office), University of Cape Town, Private Bag, Rondebosch, 7700, by 31 December 1984. Please quote reference ED/41010 on the application.

Further information may be obtained from the Registrar or the Secretary, SA Universities Offices, Chichester House, 278 High Holborn, London WC1V 7HE.

**The University's policy is not to discriminate  
on the grounds of sex, race or religion.**

**Further information**

**ARCHAEOLOGY**  
**COGNITIVE**  
**ANTHROPOLOGY**  
**SYMBOLISM**  
**PHYSICAL**  
**ANTHROPOLOGY**

Some teaching of basic undergraduate survey courses also required. Languages of instruction: Arabic and English. Applicants in teaching positions in Arabic Anthropology: M. A. required. One year's college credit. Salary range from \$450 to \$800 (1969-70) with experience and rank. Contact: Dr. Anthony, Yarmouk Univ., P.O. Box 157, Jordan by February 15, 1970. Details of curriculum vitae and names of three references. \$11.

**LECTURER**  
**(TENURABLE)**  
**SOCIOLOGY**

Higher degree in Sociology required. While it is hoped that the successful candidate will contribute to the introductory course, the position involves advanced methods courses. We offer an attractive salary and excellent benefits. All interested applicants should send resumes and other skills and interests to the undersigned to apply.

Closing date: 11th January 1970. Ref. 43484.

**Miscellaneous**

Salaries per annum: Senior Lecturer: \$44,800 - \$50,800; Junior Lecturer: \$34,800 - \$38,800.

For additional information and application forms are available from: The Director, University of Hong Kong.

**Music Studies Hostel**  
**Trust Limited**  
**Henry Wood House**  
**Hostel**

A SCHOOLS

**TIMES HIGHER EDUCATION  
SUPPLEMENT**

***Special Book Numbers  
for 1985***

on request.

[illegible]

University of Queens-  
land on Equal Opportunity  
Cover. (53-480) H13

This hostel situated in Cam-  
berwell, London SE25, for 90  
music students from the four  
London conservatoires.

Duties are part-time term-  
time only (24 weeks annually)  
and comprise on-call duty in  
the evenings and at week-  
ends. Postholder required to  
live in with free accommoda-  
tion provided. Salary around  
£2,850 p.a.

Write giving curriculum  
vite to Director Admiration  
Guildhall School of Music and  
Drama, Silk Street, Barbican  
EC3Y 8DT. (43107) H28

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# PLEASE NOTE

**CLASSIFIED COPY DEADLINES FOR  
THE FOLLOWING ISSUES OF THE  
T.H.E.S. ARE:**

**21st DECEMBER 1984**  
is 4 pm **THURSDAY 13th DECEMBER**

**28th DECEMBER 1984**  
is 4 PM **TUESDAY 18th DECEMBER**

**4th JANUARY 1985**  
is **THURSDAY 20th JANUARY**

|          |    |                             |
|----------|----|-----------------------------|
| FEBRUARY | 15 | European Studies            |
|          | 22 | Philosophy                  |
| MARCH    | 1  | Environmental Sciences (I)  |
|          | 8  | History (I)                 |
|          | 15 | Maths and Physics (II)      |
|          | 22 | Social Policy               |
|          | 29 | English                     |
| APRIL    | 12 | Psychology (II)             |
|          | 12 | Law                         |
|          | 26 | Computer Studies (II)       |
| MAY      | 3  | Sociology (I)               |
|          | 10 | Chemistry                   |
|          | 17 | American Studies            |
|          | 24 | Economics (I)               |
|          | 31 | Biological Sciences (II)    |
| JUNE     | 7  | Education (I)               |
|          | 14 | Engineering                 |
| OCTOBER  | 4  | Environmental Sciences (II) |
|          | 11 | History (II)                |
|          | 18 | Maths and Physics (II)      |
| NOVEMBER | 1  | Psychology (II)             |
|          | 8  | Economics (II)              |
|          | 15 | Biological Sciences (II)    |
|          | 22 | Sociology (II)              |
|          | 29 | Computer Studies (II)       |
| DECEMBER | 6  | Education (II)              |